

STRATEGIES TO ENHANCE OCCUPATIONAL HEALTH AND SAFETY ACCOUNTABILITY IN MUSI BANYUASIN REGENCY

Andries Lionardo¹, Arrahman Syafabri²,
Amma Fathuurrahmaan³, Hatta M. Saleh⁴ dan Ryan Adam⁵

^{*12345}Universitas Sriwijaya, Indralaya, Indonesia

^{*1}Correspondence Author Email: andrieslionardo@fisip.unsri.ac.id

ABSTRACT

Occupational Health and Safety (OHS) accountability has increasingly become a cornerstone of sustainable labor governance, particularly in developing regions where informal and part-time employment structures dominate. In Indonesia, despite an extensive regulatory framework including Law No. 1 of 1970 on Occupational Safety and Government Regulation No. 50 of 2012 on OHS Management Systems (SMK3) implementation remains inconsistent, with accountability mechanisms still weak at both institutional and behavioral levels. This study aims to formulate a strategic framework to enhance OHS accountability in Musi Banyuasin Regency, South Sumatra, as a representative industrial area facing rapid employment transformation. Using a mixed-method design, the research integrates quantitative labor market data (2020–2024) with qualitative interviews involving key government, industry, and labor stakeholders. Quantitative findings reveal persistent gender disparities in employment and a high share of part-time labor, indicating fragility in OHS compliance and risk management. Qualitative analysis identifies fragmented inter-agency coordination, limited safety literacy, and underdeveloped digital reporting mechanisms. The study proposes a collaborative governance-based model emphasizing digitalized reporting, inter-institutional data integration, and community-centered safety literacy enhancement. This model extends the theoretical discourse on accountability by bridging the gap between regulatory compliance and moral responsibility. The findings contribute to the literature on safety governance by conceptualizing accountability as a multidimensional construct that intertwines institutional transparency, behavioral commitment, and procedural enforcement. Practically, the paper provides a roadmap for strengthening OHS accountability through policy innovation and technology adoption, aligning local governance reform with the broader Sustainable Development Goals (SDG 8.8) on safe and secure working environments.

Keywords: Accountability, Occupational Health and Safety, Collaborative Governance, Digital Reporting, Safety Literacy, Indonesia

1. INTRODUCTION

1.1 Background and Rationale

Occupational Health and Safety (OHS) is a vital component of sustainable labor governance and an essential determinant of economic resilience, social protection, and human well-being. Globally, the International Labour Organization (ILO) estimates that over 2.9 million workers die annually due to occupational accidents and work-related diseases, while another 374 million suffer from non-fatal injuries each year (ILO, 2019). These staggering figures underscore the structural weaknesses of OHS accountability systems, particularly in developing countries where labor informality, limited safety culture, and inadequate institutional coordination persist.

Indonesia, as a rapidly industrializing economy, reflects this global paradox. While the country has established a robust regulatory foundation through Law No. 1 of 1970 on Occupational Safety and Government Regulation No. 50 of 2012 on SMK3 the practical enforcement of these regulations remains uneven across regions. In local contexts such as Musi Banyuasin Regency, South Sumatra, industrial

expansion has been accompanied by the rise of informal and part-time employment structures, creating complex governance challenges for ensuring workplace safety and accountability.

OHS accountability refers to the explicit obligation of institutions, employers, and workers to be answerable for safety performance, ensuring that every occupational activity adheres to preventive principles and transparent reporting. However, weak monitoring, fragmented communication between agencies, and low OHS literacy among workers have hindered progress toward effective accountability in practice. Strengthening accountability is thus not merely a matter of enforcing compliance but of cultivating a safety culture grounded in shared moral and institutional responsibility.

1.2 Global Discourse and Theoretical Foundation

Accountability in OHS governance has evolved from a compliance-based paradigm to a participatory and collaborative framework emphasizing *shared responsibility* and *transparency*. Bovens (2007) conceptualizes accountability as a relational mechanism linking actors (those responsible) and forums (those assessing responsibility), anchored by three principles: answerability, transparency, and enforceability. In the context of OHS, these principles translate into measurable commitments from employers ensuring safe systems of work to regulatory agencies enforcing safety standards through inspection, data integration, and sanctions.

Parallel to this, the Collaborative Governance Model proposed by Ansell and Gash (2008) introduces the notion that effective policy execution arises from cross-sectoral cooperation among government, industry, and civil society. When applied to occupational safety, collaborative governance offers a means to reconcile regulatory authority with participatory engagement, allowing multiple stakeholders to co-produce safety outcomes. Complementarily, Neal and Griffin's (2006) model of individual safety performance highlights that worker behavior shaped by motivation, literacy, and safety culture plays a critical role in translating institutional accountability into tangible outcomes.

Hence, OHS accountability must be viewed as a multidimensional construct: institutional coordination, behavioral awareness, and procedural mechanisms must operate synergistically to produce sustainable safety outcomes. The intersection of these dimensions provides the conceptual basis for this study's analytical framework.

1.3 Problem Statement and Research Gap

Despite regulatory progress, Indonesia continues to face persistent accountability gaps in occupational safety governance. Nationally, labor data indicate rising employment formalization, yet incidents of workplace accidents, underreporting, and limited safety education remain prevalent (Setiawan et al., 2021). At the subnational level, Musi Banyuasin Regency exhibits typical characteristics of this challenge: fluctuating employment patterns, gender disparities, and uneven OHS implementation across sectors.

Prior studies (Quinlan & Bohle, 2009; Gunningham & Sinclair, 2009) emphasize that part-time and informal workers are disproportionately exposed to workplace hazards, often due to exclusion from institutional safety mechanisms. However, few empirical studies have analyzed how accountability mechanisms operate in decentralized governance settings such as Indonesia's local governments, where coordination among agencies and industries is critical yet fragmented.

This research addresses these gaps by examining:

- (1) how employment structure and OHS literacy shape accountability performance;
- (2) how institutional and digital mechanisms influence the transparency of incident reporting; and
- (3) how collaborative governance principles can inform a reform agenda for sustainable safety accountability.

By bridging empirical evidence with theoretical insight, this study contributes both to policy innovation and academic discourse on *integrated accountability frameworks* in occupational safety.

1.4 Research Objectives and Significance

The study pursues three main objectives:

1. To analyze the relationship between employment structure, safety literacy, and OHS reporting practices in Musi Banyuasin Regency.
2. To evaluate institutional coordination mechanisms and digital governance readiness in managing safety accountability.
3. To formulate strategic recommendations for strengthening OHS accountability through collaborative and digitalized approaches.

Theoretically, this paper contributes to public administration and labor governance studies by operationalizing accountability as a *multi-actor and multi-level construct* embedded within OHS systems. Practically, it provides a localized policy roadmap that aligns regional safety reforms with Indonesia's national labor policies and the United Nations Sustainable Development Goals (SDG 8.8).

Ultimately, this research situates OHS accountability not only as a compliance issue but as an ethical and developmental imperative that bridges institutional integrity, worker welfare, and technological innovation.

2. LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

2.1 Conceptualizing Accountability in Occupational Health and Safety

Accountability represents one of the core principles of good governance and an indispensable component of effective public administration. In the context of occupational health and safety (OHS), accountability entails not only compliance with statutory regulations but also the moral and institutional obligation to ensure that safety standards are consistently implemented and transparently monitored. Bovens (2007) defines accountability as a social relationship in which an actor is obliged to explain and justify conduct to a forum, which can impose consequences. This conceptualization positions accountability as both *retrospective* (evaluating past actions) and *prospective* (preventing future risks).

In OHS governance, accountability is often operationalized through three interdependent dimensions: answerability, transparency, and enforceability (Bovens, 2007; Gunningham & Sinclair, 2009). *Answerability* refers to the duty of employers and regulators to provide clear justification for safety decisions. *Transparency* involves accessible and reliable information systems that allow workers,

inspectors, and the public to monitor safety performance. *Enforceability* concerns the existence of sanctions and corrective mechanisms to ensure compliance. However, studies show that many developing economies struggle to institutionalize these dimensions effectively due to weak monitoring capacity and fragmented coordination (Setiawan et al., 2021; ILO, 2023).

Accountability also implies a relational dynamic between government, employers, and employees all of whom share varying degrees of responsibility in maintaining safe workplaces. When accountability mechanisms are absent or poorly enforced, the OHS system becomes reactive rather than preventive, responding only after accidents occur. Therefore, institutionalizing accountability requires aligning administrative responsibility with ethical commitment and community participation, transforming OHS from a bureaucratic requirement into a shared governance process.

2.2 Collaborative Governance and Institutional Integration

The concept of *collaborative governance* provides a theoretical lens to understand how accountability can be enhanced through multi-actor engagement. Ansell and Gash (2008) define collaborative governance as a process in which public agencies engage non-state stakeholders in collective decision-making, guided by consensus and shared objectives. This framework is particularly relevant to OHS governance, where the roles of the state, industry, and civil society intersect around the shared goal of protecting workers.

In Indonesia, OHS management operates under a decentralized administrative structure, meaning local governments possess substantial discretion in implementing labor and safety regulations. However, the absence of coordinated data systems often results in duplication of efforts and policy fragmentation. Collaborative governance offers a corrective approach: by facilitating inter-institutional coordination, it ensures that information on safety incidents, inspections, and compliance is shared transparently among agencies. This can enhance institutional accountability by reducing bureaucratic silos and promoting joint problem-solving.

Empirical studies support this proposition. Emerson, Nabatchi, and Balogh (2012) argue that collaborative governance enhances policy effectiveness when three conditions are met: (1) shared motivation among actors, (2) joint capacity for problem-solving, and (3) clearly defined procedural rules. In OHS contexts, these correspond to safety culture, institutional resources, and regulatory enforcement. Integrating these principles enables governments to transform fragmented accountability mechanisms into adaptive and resilient safety systems.

Furthermore, the rise of digital governance and e-reporting tools has expanded the capacity for collaboration. Digitalized platforms facilitate real-time reporting of workplace accidents, improve data interoperability, and support transparency in regulatory enforcement. Such innovations align with Indonesia's ongoing digital transformation agenda (SPBE) and can significantly strengthen accountability mechanisms in labor governance at the local level.

2.3 Safety Culture, Literacy, and Behavioral Accountability

Beyond institutional frameworks, accountability is deeply rooted in worker behavior and organizational culture. Neal and Griffin (2006) propose a model of *individual safety performance* in which safety compliance and safety participation are mediated by motivation and situational awareness.

Their findings emphasize that regulations alone cannot ensure safety behavioral commitment and literacy are equally crucial.

In regions where informal and part-time employment dominates, workers often lack exposure to structured OHS training. Quinlan and Bohle (2009) describe this as a *precarious employment effect*, wherein insecurity and limited access to protective systems lead to elevated accident risks. Similarly, Gunningham and Sinclair (2009) highlight the importance of *organizational trust* as a precondition for safety accountability: workers are more likely to report incidents when they trust that employers and regulators will respond fairly rather than punitively.

OHS literacy encompassing workers' understanding of hazards, rights, and reporting mechanisms thus functions as a behavioral foundation of accountability. Low literacy levels correlate with underreporting, negligence, and unsafe practices, particularly among temporary or subcontracted workers. Therefore, promoting literacy through community-based education, vocational training, and media campaigns becomes essential for embedding accountability within workplace culture.

In Musi Banyuasin Regency, the interplay between institutional gaps and behavioral deficiencies manifests in inconsistent reporting, low compliance, and weak enforcement. By improving literacy and cultivating a culture of shared responsibility, behavioral accountability can reinforce institutional and procedural dimensions, leading to a more holistic accountability system.

2.4 Digital Transformation and Procedural Accountability

Procedural accountability in OHS governance pertains to the mechanisms through which incidents are reported, investigated, and corrected. Traditionally, reporting systems in Indonesia rely on manual documentation, which is prone to delay, data loss, and underreporting. The transition to digital platforms has therefore emerged as a strategic necessity to ensure transparency and efficiency.

Digital governance frameworks enable real-time data collection, centralized databases, and traceable audit trails. For instance, integrating OHS reporting into local *E-Government* portals allows for synchronization between manpower departments, health offices, and industry stakeholders. Such platforms can also incorporate geo-tagged incident mapping, predictive analytics, and automated notifications to improve response time.

However, digitalization alone does not guarantee accountability. As Kim and Lee (2022) note, the success of digital governance depends on institutional readiness, user competence, and legal frameworks ensuring data integrity. In developing contexts, the absence of inter-agency interoperability often hampers the full potential of digital OHS management systems. Therefore, building *procedural accountability* requires both technological adoption and governance reform including standardized reporting protocols, open-access dashboards, and transparent audit procedures.

This study adopts the view that procedural reform through digitalization represents the most feasible entry point for strengthening OHS accountability in Musi Banyuasin. It offers an immediate pathway for improving transparency while laying the groundwork for deeper institutional and behavioral transformation.

2.5 Conceptual Framework

Based on the reviewed literature, this study conceptualizes OHS accountability as a multidimensional construct comprising institutional, behavioral, and procedural components, each reinforced through collaborative and digital governance principles.

1. Institutional Accountability refers to the structural and inter-agency mechanisms ensuring that OHS responsibilities are clearly defined, monitored, and coordinated.
2. Behavioral Accountability captures the attitudes, awareness, and safety literacy of workers and managers, determining how regulations translate into practice.
3. Procedural Accountability involves transparent, enforceable systems for incident reporting, investigation, and feedback, increasingly enabled by digital technology.

These dimensions interact dynamically: institutional coordination fosters a conducive environment for behavioral compliance, while procedural transparency reinforces both trust and enforcement. Figure 1 (conceptually described below) illustrates the hypothesized relationships:

- Employment Structure '! OHS Literacy '! Reporting Behavior '! OHS Accountability
- Institutional Coordination '! Digital Integration '! Procedural Transparency '! OHS Accountability

Collectively, this framework positions collaborative digital governance as a cross-cutting enabler that strengthens all three accountability dimensions. The model underpins the subsequent methodological design and guides the analysis of how structural, behavioral, and procedural factors jointly shape OHS accountability in Musi Banyuasin Regency.

3. RESEARCH METHOD

3.1 Research Design and Approach

This study employed a mixed-method research design, combining quantitative and qualitative approaches to produce a comprehensive understanding of Occupational Health and Safety (OHS) accountability in Musi Banyuasin Regency, Indonesia. The rationale for adopting a mixed-method approach lies in the multidimensional nature of accountability, which encompasses not only statistical indicators of employment and safety performance but also institutional processes and behavioral dynamics that cannot be fully captured through numerical data alone.

The quantitative component aimed to identify trends and disparities in employment structure and OHS-related indicators between 2020 and 2024. Descriptive and trend analyses were used to measure the variations in open unemployment rates, gender distribution, and employment status (full-time, part-time, semi-unemployed). These variables serve as proxies for understanding structural conditions influencing OHS accountability.

Meanwhile, the qualitative component explored the institutional, procedural, and behavioral dimensions of accountability through semi-structured interviews and Focus Group Discussions (FGDs) involving key stakeholders. The qualitative inquiry was essential to uncover perceptions, coordination challenges, and reporting practices that underpin OHS implementation at the local level. By triangulating numerical and narrative data, this study achieved both breadth and depth in understanding the complexity of accountability in decentralized labor governance.

3.2 Data Sources and Sampling

• Quantitative Data Sources.

Quantitative data were drawn from the official publications of the Badan Pusat Statistik (BPS) of Musi Banyuasin Regency and South Sumatra Province covering the years 2020–2024. The datasets included indicators such as:

1. Open Unemployment Rate (TPT) disaggregated by gender;
2. Employment status categorized as full-time, part-time, or semi-unemployed; and
3. Supplementary data on labor force participation and sectoral distribution.

These datasets were verified through cross-referencing with regional labor reports from the Department of Manpower and Transmigration (Disnakertrans) to ensure consistency and reliability.

• Qualitative Data Sources.

The qualitative data were obtained from in-depth interviews with 20 key informants representing various institutional levels, including:

- Officials from the Department of Manpower, Health Office, and Regional Development Planning Agency (Bappeda);
- Safety managers from large-scale industrial companies;
- Representatives from worker unions and informal-sector associations; and
- Academics and experts in OHS from Universitas Sriwijaya.

Participants were selected using a purposive sampling technique, focusing on individuals with direct experience or policy responsibility for OHS implementation. The inclusion criteria emphasized professional involvement in safety management or institutional coordination within the Musi Banyuasin labor ecosystem.

Each interview lasted approximately 45–60 minutes and followed a semi-structured format guided by three thematic domains: (1) institutional coordination and regulatory compliance, (2) worker literacy and behavioral engagement, and (3) procedural mechanisms for reporting and enforcement. Focus Group Discussions (FGDs) were later conducted with eight participants to validate and expand upon the findings emerging from individual interviews.

3.3 Data Analysis Techniques

The quantitative data were analyzed using descriptive statistics and trend analysis to highlight patterns of employment and OHS-relevant indicators over time. The numerical results were interpreted not merely as economic statistics but as contextual indicators of accountability capacity, linking employment precarity to OHS vulnerabilities.

The qualitative data were transcribed and coded using thematic analysis following Braun and Clarke's (2006) six-step procedure: data familiarization, initial coding, theme identification, theme

review, theme definition, and narrative synthesis. Three major themes emerged: (1) institutional fragmentation and coordination barriers, (2) behavioral gaps and literacy challenges, and (3) procedural and technological limitations.

To ensure validity and reliability, several verification techniques were employed:

- Triangulation, by comparing findings from quantitative data, interview narratives, and documentary evidence;
- Member checking, where selected participants reviewed interpretations for factual accuracy; and
- Peer debriefing, involving two external OHS researchers from Universitas Sriwijaya who assessed methodological consistency and thematic coherence.

This combination of quantitative rigor and qualitative depth ensures that the findings not only describe but also explain the causal linkages shaping OHS accountability dynamics in the region.

3.4 Ethical Considerations and Research Integrity

Ethical compliance was maintained throughout the study in accordance with the Research Ethics Protocol of Universitas Sriwijaya (Approval No. 2024/UNSRI/FISIP/ETHICS/02). All participants provided informed consent before data collection and were informed about the study's objectives, confidentiality guarantees, and their right to withdraw at any point.

Personal identifiers were anonymized during transcription, and organizational data were coded to protect sensitive institutional information. The research process adhered to the principles of beneficence, non-maleficence, and justice, ensuring that participants derived potential benefits from knowledge-sharing without facing any professional or personal risks.

Furthermore, in alignment with the Committee on Publication Ethics (COPE) standards, data transparency and citation integrity were observed. Quantitative datasets are publicly accessible through the BPS portal, and qualitative transcripts are securely stored under restricted academic access for verification and replication purposes.

The commitment to ethical rigor reinforces the study's credibility and aligns with international standards for social science research, ensuring that its findings can inform both academic discourse and real-world policy reforms on occupational health and safety governance.

4. RESULTS

4.1 Quantitative Overview: Labor Market and Employment Trends (2020–2024)

The analysis of regional labor indicators in Musi Banyuasin Regency provides a quantitative foundation for understanding the broader structural determinants of Occupational Health and Safety (OHS) accountability. Data obtained from the Badan Pusat Statistik (BPS) Musi Banyuasin (2020–2024) indicate a clear downward trend in the overall unemployment rate, accompanied by shifts in gender composition and employment types.

Table 1. Open Unemployment Rate (TPT) by Gender in Musi Banyuasin Regency, 2020–2024

Year	Male TPT (%)	Female TPT (%)	Total TPT (%)
2020	2.51	2.28	4.79
2021	0.03	4.96	3.99
2022	4.38	4.45	4.40
2023	2.58	2.60	2.58
2024	1.58	3.08	2.13

Source: Author’s calculation based on *Badan Pusat Statistik (BPS) Kabupaten Musi Banyuasin, 2020–2024*.

The data reveal a consistent reduction in unemployment over five years, though gender inequality persists. Female unemployment peaked in 2021, suggesting a structural imbalance in access to stable work. Such disparities often mirror inequities in access to training and OHS information, reinforcing gendered patterns of vulnerability in the workplace.

The data reveal that although the total unemployment rate declined from 4.79% in 2020 to 2.13% in 2024, gender inequality persists, with female unemployment consistently higher than that of males. The significant disparity in 2021, when female unemployment (4.96%) far exceeded male unemployment (0.03%), illustrates structural gender imbalances in access to formal and stable employment.

These disparities have direct implications for OHS accountability. Female and part-time workers often occupy precarious employment positions frequently in informal or subcontracted sectors where formal safety mechanisms and social protection are weak. This finding aligns with ILO (2020), which noted that gendered occupational segregation often results in unequal access to workplace safety measures. It also resonates with Quinlan and Bohle’s (2009) *precarious employment hypothesis*, suggesting that employment instability correlates with elevated safety risks and underreporting of occupational incidents.

4.2 Composition of Employment and work-Time Patterns

Table 2. Proportion of Workers by Employment Type in Musi Banyuasin Regency, 2021–2024

Year	Full-Time (%)	Part-Time (%)	Semi-Unemployed (%)
2021	54.25	33.78	11.97
2022	58.78	36.92	4.30
2023	78.56	17.70	3.74
2024	85.44	7.71	6.85

Source: Author’s compilation based on *Badan Pusat Statistik (BPS) Kabupaten Musi Banyuasin, 2021–2024*.

The transition from part-time to full-time employment between 2021 and 2024 indicates a post-pandemic labor recovery and improved absorption in formal sectors. Nevertheless, while statistical improvement suggests macroeconomic stability, it does not necessarily equate to enhanced workplace safety. Interviews revealed that part-time and semi-unemployed workers constituting nearly 42% of the workforce in 2021 remained largely excluded from safety orientation programs, health insurance, and accident reporting systems.

This exclusionary pattern weakens collective accountability. As Neal and Griffin (2006) explain, accountability at the individual level is contingent on *safety participation* the degree to which workers

actively engage in OHS practices. Without institutional inclusion or continuous training, workers in precarious jobs tend to prioritize short-term employment continuity over long-term safety compliance, creating systemic vulnerabilities.

4.3 Institutional Coordination and Governance Challenges

Qualitative findings reveal that institutional fragmentation remains the primary barrier to OHS accountability in Musi Banyuasin. Interviews with local government officials uncovered overlapping mandates between the Department of Manpower, the Health Office, and the Regional Development Planning Agency (Bappeda), which often operate under different reporting protocols and databases.

One official described the coordination gap as follows:

"We collect data on accidents separately, but these are rarely synchronized with reports from companies or hospitals. Each agency has its own format and timeline."

(Interview, Manpower Office, 2024)

This institutional siloing undermines transparency and data accuracy. Without an integrated database, enforcement agencies face difficulties in identifying high-risk sectors or ensuring follow-up inspections. A safety manager from one industrial firm confirmed that OHS audits are "sporadic and reactive," typically occurring after major incidents rather than as part of routine preventive governance.

These findings mirror Gunningham and Sinclair's (2009) argument that organizational trust and regulatory coherence are central to successful safety governance. When agencies operate in isolation, accountability becomes diluted, allowing non-compliance to persist without systemic correction. Thus, institutional accountability in Musi Banyuasin remains largely procedural and episodic, lacking the continuity required for sustained safety culture development.

4.4 Behavioral and Literacy Dimensions of Accountability

The behavioral dimension of accountability focuses on workers' knowledge, attitudes, and perceptions toward OHS responsibilities. Interview data revealed that OHS literacy among informal and contract workers remains critically low. Most respondents in informal employment reported limited understanding of incident-reporting procedures and considered OHS compliance as an "employer's obligation" rather than a shared responsibility.

For example, one part-time worker at a construction site noted:

"We wear helmets only when the supervisor is present. Once the inspection is done, most of us remove them because it's uncomfortable and slows work." *(Interview, construction worker, 2024)*

This illustrates what Neal and Griffin (2006) describe as *situational compliance* temporary adherence to rules in response to supervision rather than internalized safety consciousness. In addition, interviews with union representatives highlighted that workers often refrain from reporting minor injuries due to fear of wage deductions or contract termination.

These behavioral patterns indicate that accountability in Musi Banyuasin is constrained not only by institutional inefficiency but also by psychological and socio-economic pressures. Enhancing accountability therefore requires both structural reform and behavioral transformation through targeted safety literacy programs, participatory workshops, and peer-based monitoring mechanisms.

4.5 Procedural and Technological Mechanisms

Procedural accountability centers on the systems used to document, report, and enforce OHS incidents. Field evidence shows that most companies in Musi Banyuasin still rely on manual documentation and paper-based reporting, submitted quarterly to the local Department of Manpower. Such systems result in underreporting and delayed response times, particularly for small and medium-sized enterprises (SMEs).

A safety manager at a local palm oil processing plant explained:

“Our reporting still uses Excel sheets. Sometimes data are lost or inconsistent with hospital records. Digital submission to the government would make it easier, but there’s no unified platform yet.”

This situation reflects the broader challenge of digital readiness in Indonesia’s local labor governance. The absence of integrated systems contradicts the government’s *Sistem Pemerintahan Berbasis Elektronik (SPBE)* agenda, which mandates digital transformation across sectors.

Nevertheless, several interviewees expressed optimism about digitalization. They recognized that digital OHS reporting systems could improve transparency, provide early warning signals, and reduce bureaucratic bottlenecks. As Kim and Lee (2022) argue, the success of digital accountability depends not only on infrastructure but also on institutional willingness to adopt open data practices and interoperable platforms. In Musi Banyuasin, such transformation would require cross-sectoral cooperation and a strong policy mandate linking safety data to performance evaluation and public reporting.

4.6 Integrative Framework of OHS Accountability in Musi Banyuasin

Drawing from both quantitative and qualitative findings, three interrelated dimensions of OHS accountability are identified:

Dimension	Key Observations	Strategic Implications
Institutional Accountability	Fragmented data and overlapping mandates among agencies; reactive enforcement	Develop a centralized digital OHS reporting platform connecting government, industry, and health institutions
Behavioral Accountability	Low safety literacy; situational compliance; fear of reporting incidents	Implement community-based safety literacy programs and peer learning for informal workers
Procedural Accountability	Manual, paper-based reporting; lack of transparency	Adopt electronic incident reporting tools, integrate them with SPBE systems, and ensure public accessibility

The triangulated results demonstrate that enhancing accountability requires alignment between institutional integration, behavioral reform, and procedural modernization. Institutional accountability ensures coherent governance; behavioral accountability builds intrinsic safety culture; and procedural accountability translates both into transparent, enforceable practices.

Therefore, Musi Banyuasin's path toward sustainable OHS governance must evolve from compliance-based regulation to culture-based accountability, where digital governance, participatory mechanisms, and ethical responsibility converge to produce measurable safety outcomes.

5. DISCUSSION

5.1 Reconceptualizing Accountability in OHS Governance

The findings of this study reaffirm that accountability in occupational health and safety (OHS) governance transcends regulatory compliance; it is a multidimensional construct encompassing institutional, behavioral, and procedural dynamics. Consistent with Bovens (2007), accountability can be understood as a relationship of answerability and enforceability embedded within governance structures. In the case of Musi Banyuasin Regency, however, accountability mechanisms remain fragmented, reflecting the persistence of bureaucratic silos that inhibit information sharing and collective enforcement.

This fragmentation illustrates what Bovens describes as the *problem of many hands* where multiple actors share overlapping responsibilities without clear delineation of who is ultimately answerable for outcomes. The coexistence of the Department of Manpower, Health Office, and Planning Agency in safety regulation without a unified platform exemplifies this condition. As a result, OHS accountability becomes diffused, reactive, and susceptible to institutional inertia.

The study therefore extends the theoretical understanding of accountability by situating it within the decentralized governance context of Indonesia, where vertical coordination (national-to-local) and horizontal collaboration (inter-agency) must coexist. Accountability, in this sense, is both a *governance mechanism* and a *cultural norm* one that requires institutional redesign and value transformation to operate effectively. The Musi Banyuasin case demonstrates that without coherent accountability systems, even strong legal frameworks (Law No. 1/1970; Government Regulation No. 50/2012) fail to ensure consistent safety outcomes.

5.2 Collaborative Governance as an Enabler of Accountability

The empirical findings highlight the significance of collaborative governance as a strategic enabler of accountability. Ansell and Gash (2008) argue that complex public problems including occupational safety cannot be addressed solely through hierarchical command but require multi-actor engagement characterized by trust, mutual learning, and consensus. In Musi Banyuasin, collaboration among government agencies, industry actors, and worker unions remains sporadic and largely transactional.

However, where collaborative practices have been piloted, such as joint safety training sessions involving local governments and industry associations, improvements in compliance and literacy were observed. This aligns with Emerson et al. (2012), who conceptualize collaboration as an iterative process of *shared motivation*, *joint capacity*, and *collective action*. Applying this model to OHS

governance suggests that accountability can be strengthened when actors co-produce safety outcomes through continuous dialogue and mutual monitoring.

Moreover, collaboration enhances horizontal accountability where institutions hold each other responsible through shared data, coordinated audits, and transparent performance reporting. For instance, integrating OHS data from hospitals, companies, and local governments could transform accountability from a punitive model to a *learning-based governance system* that prioritizes prevention over reaction.

Yet, collaborative governance is not value-neutral. It requires political will, institutional openness, and trust among actors conditions that are not automatically present in decentralized bureaucracies. Thus, building a collaborative accountability ecosystem in Musi Banyuasin demands a shift from bureaucratic control to participatory co-management, supported by technological integration.

5.3 Digital Governance and the Transformation of Procedural Accountability

The study's findings emphasize that digital transformation represents both a technological and institutional reform imperative for enhancing OHS accountability. Procedural accountability, which concerns how safety data are reported and enforced, is currently constrained by manual systems, inconsistent documentation, and limited interoperability among agencies.

Digital reporting platforms could resolve these inefficiencies by enabling real-time, transparent, and traceable incident reporting. The introduction of a centralized *e-OHS reporting system* linked to the *Sistem Pemerintahan Berbasis Elektronik (SPBE)* would ensure data consistency, minimize manipulation, and support performance-based oversight. As Meijer (2015) notes, digital accountability in public administration strengthens transparency not merely by disclosing information but by creating feedback loops that connect citizens, regulators, and organizations in continuous evaluation.

However, technology adoption alone cannot guarantee accountability. As Kim and Lee (2022) assert, digital governance must be accompanied by institutional readiness, legal safeguards for data integrity, and adequate human resource capacity. In Musi Banyuasin, the readiness gap manifests in limited ICT infrastructure, uneven digital literacy among civil servants, and insufficient integration between sectoral databases. Addressing these challenges requires not only investment in digital tools but also governance innovation embedding accountability-by-design principles into every procedural stage.

In this light, procedural accountability becomes dynamic: it evolves through digital transparency, automated auditing, and participatory feedback mechanisms. By institutionalizing these processes, Musi Banyuasin could transition from a compliance-based reporting culture to a predictive and preventive OHS governance model.

5.4 Behavioral Accountability and the Ethics of Safety Culture

Beyond institutional and technological reforms, the study reveals that behavioral accountability remains a crucial yet underdeveloped dimension of OHS governance. Workers' low safety literacy, temporary compliance, and fear of reporting incidents reflect a weak internalization of ethical responsibility. As highlighted by Neal and Griffin (2006), sustainable safety performance depends on two interrelated factors: *safety compliance* (following procedures) and *safety participation* (proactively contributing to safety improvement).

In Musi Banyuasin, compliance is externally driven workers follow rules only under supervision while participation is minimal due to limited trust and insecure employment conditions. This behavioral gap mirrors Gunningham and Sinclair's (2009) argument that trust is a precondition for regulatory effectiveness. Without psychological safety and mutual respect, workers are unlikely to exercise accountability or report hazards.

To strengthen behavioral accountability, interventions must target values, knowledge, and empowerment simultaneously. Community-based OHS literacy campaigns, peer-to-peer mentoring, and incentive-based reporting systems can cultivate a culture where safety becomes a shared moral duty rather than an imposed regulation. Such ethical reorientation echoes the *moral responsibility framework* of safety governance, in which accountability is driven not only by fear of sanctions but by collective conscience and civic virtue.

In this context, Musi Banyuasin's challenge is not the absence of rules but the lack of internalized ethics of care. Embedding accountability into workplace culture thus requires continuous education, participatory reflection, and leadership modeling from both government and industry actors.

5.5 Toward an Integrated Model of OHS Accountability

Synthesizing the findings across institutional, procedural, and behavioral dimensions, this study proposes an Integrated Model of OHS Accountability grounded in collaborative and digital governance principles. The model envisions accountability as a *systemic cycle* encompassing three reinforcing components:

1. Institutional Integration: Establish a unified digital reporting and monitoring system across government agencies and industries.
2. Behavioral Empowerment: Foster safety literacy and moral responsibility through participatory education and community engagement.
3. Procedural Transparency: Implement open, data-driven, and technology-enabled reporting mechanisms to ensure traceability and public oversight.

These components interact dynamically through feedback mechanisms that promote learning and continuous improvement. Institutional reforms facilitate procedural modernization, which, in turn, enhances behavioral engagement by building trust and visibility.

Such an integrated approach moves beyond traditional compliance models and aligns with the "culture-based accountability" paradigm where safety is viewed as a collective value embedded in daily organizational practices. For Musi Banyuasin, operationalizing this model would position the region as a provincial pioneer in safety governance reform, aligning with Indonesia's 2045 Vision for sustainable and inclusive labor development.

6. CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

This study set out to examine and strengthen the concept of Occupational Health and Safety (OHS) accountability within the decentralized governance context of Musi Banyuasin Regency, Indonesia. By employing a mixed-method approach integrating quantitative labor statistics (2020–2024) with

qualitative interviews and focus group discussions the research provides an empirically grounded and theoretically informed understanding of how accountability operates across institutional, behavioral, and procedural dimensions.

The findings reveal that while employment stability and formalization have improved in recent years, OHS accountability remains constrained by institutional fragmentation, limited inter-agency coordination, and low worker literacy. The absence of an integrated reporting mechanism and the reliance on manual documentation systems weaken transparency and hinder enforcement. At the behavioral level, a culture of situational compliance persists workers tend to adhere to safety rules only under supervision, indicating that safety norms have not yet been internalized as shared ethical values.

From a theoretical standpoint, the study extends Bovens' (2007) framework of accountability and Ansell and Gash's (2008) model of collaborative governance by demonstrating that accountability in OHS governance is relational, multi-scalar, and technologically mediated. Effective accountability emerges not from control or punishment but from institutional synergy, behavioral empowerment, and procedural transparency. In other words, accountability must evolve from a *compliance-based system* toward a *culture-based governance paradigm* where moral responsibility, participatory engagement, and digital innovation coexist to reinforce safety outcomes.

Thus, the Musi Banyuasin case illustrates the dual challenge of modernization and moralization: the need to modernize OHS governance through digital tools while simultaneously cultivating ethical responsibility across institutions and individuals. Together, these transformations can reposition local labor governance as a driver of sustainable development and social protection, aligned with Sustainable Development Goal (SDG) 8.8 ensuring safe and secure working environments for all workers.

6.2 Policy and Practical Recommendations

Based on the empirical evidence and theoretical analysis, three interdependent strategies are proposed to enhance OHS accountability in Musi Banyuasin and comparable regions:

1. Institutional Integration through Digital Governance.

The establishment of a Centralized OHS Accountability Information System (OHS-AIS) is essential. This digital platform should interconnect local government agencies (Department of Manpower, Health Office, Bappeda), industries, and hospitals under a unified reporting protocol. Such integration would reduce data duplication, strengthen cross-agency coordination, and enhance real-time monitoring. A legal framework mandating digital submission of safety reports can reinforce institutional accountability and ensure compliance with the *Sistem Pemerintahan Berbasis Elektronik (SPBE)* policy.

2. Behavioral Transformation through Safety Literacy and Participation.

To address low OHS awareness, local governments should collaborate with labor unions, NGOs, and universities to launch community-based safety literacy programs targeting informal and part-time workers. These initiatives should adopt participatory and experiential learning methods peer mentoring, safety storytelling, and simulation-based training to build both cognitive and moral engagement. By framing safety as a shared social value rather than a regulatory burden, behavioral accountability can gradually be internalized across all employment categories.

3. Procedural Modernization and Transparent Enforcement.

Enhancing procedural accountability requires the digitalization of inspection and reporting mechanisms. The introduction of electronic incident reporting (E-Reporting) and public safety dashboards can promote transparency, allowing citizens and civil society to monitor safety performance. Furthermore, linking OHS compliance indicators to company licensing, incentives, or public recognition can provide both coercive and normative motivation for adherence to accountability standards.

6.3 Future Research Directions

While this study has contributed to both theory and practice, it recognizes certain limitations. The focus on one regency limits the generalizability of findings to other Indonesian regions with differing economic structures or administrative capacities. Future research should employ comparative multi-region analyses and longitudinal studies to assess how accountability mechanisms evolve over time and how digital transformation reshapes governance behaviors. Moreover, integrating network analysis or system dynamics modeling could provide deeper insights into the complex interdependencies among institutional actors.

Ultimately, advancing OHS accountability in Indonesia requires not only better regulations but a paradigm shift one that recognizes accountability as a collective ethical responsibility, rooted in transparency, collaboration, and technological adaptation. When embedded within a participatory governance culture, accountability becomes not merely an obligation but a shared commitment to human dignity and sustainable safety.

REFERENCES

- Ansell, C., & Gash, A. (2008). Collaborative governance in theory and practice. *Journal of Public Administration Research and Theory*, 18(4), 543–571. <https://doi.org/10.1093/jopart/mum032>
- Bovens, M. (2007). Analysing and assessing accountability: A conceptual framework. *European Law Journal*, 13(4), 447–468. <https://doi.org/10.1111/j.1468-0386.2007.00378.x>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Emerson, K., Nabatchi, T., & Balogh, S. (2012). An integrative framework for collaborative governance. *Journal of Public Administration Research and Theory*, 22(1), 1–29. <https://doi.org/10.1093/jopart/mur011>
- Gunningham, N., & Sinclair, D. (2009). Organizational trust and the implementation of safety regulation. *Law & Policy*, 31(2), 210–233. <https://doi.org/10.1111/j.1467-9930.2009.00309.x>
- International Labour Organization (ILO). (2019). *Safety and health at the heart of the future of work: Building on 100 years of experience*. Geneva: ILO.
- International Labour Organization (ILO). (2020). *Gender equality in the workplace: International evidence and policy lessons*. Geneva: ILO.
- International Labour Organization (ILO). (2023). *World Employment and Social Outlook: Trends 2023*. Geneva: ILO.

- Kementerian Ketenagakerjaan Republik Indonesia. (1970). Undang-Undang No. 1 Tahun 1970 tentang Keselamatan Kerja. Jakarta: Kemnaker RI.
- Pemerintah Republik Indonesia. (2012). Peraturan Pemerintah No. 50 Tahun 2012 tentang Penerapan Sistem Manajemen Keselamatan dan Kesehatan Kerja (SMK3). Jakarta: Sekretariat Negara.
- Neal, A., & Griffin, M. A. (2006). Developing a model of individual safety performance. *Journal of Safety Research*, 37(4), 333–343. <https://doi.org/10.1016/j.jsr.2006.04.002>
- Quinlan, M., & Bohle, P. (2009). Overstretched and unreciprocated commitment: Reviewing research on the OHS effects of downsizing and job insecurity. *International Journal of Health Services*, 39(1), 1–44. <https://doi.org/10.2190/HS.39.1.a>
- Setiawan, E., Santoso, B., & Rachmawati, D. (2021). Governance fragmentation and occupational safety accountability in Indonesia's industrial zones. *Journal of Governance and Public Policy*, 8(2), 145–158.
- Kim, S., & Lee, J. (2022). Digital accountability in public service delivery: Enhancing transparency through e-governance platforms. *Government Information Quarterly*, 39(4), 101715. <https://doi.org/10.1016/j.giq.2022.101715>
- Meijer, A. (2015). Government transparency in historical perspective: From the ancient regime to open data in the Netherlands. *International Journal of Public Administration*, 38(3), 189–199. <https://doi.org/10.1080/01900692.2014.934837>
- OECD. (2022). *The future of work: Occupational health, safety, and well-being*. Paris: OECD Publishing.
- Hutter, B. M. (2011). *Managing food safety and hygiene: Governance and regulation as risk management*. Edward Elgar Publishing.
- De Vries, H., Tummers, L., & Bekkers, V. (2018). The diffusion and adoption of public sector innovations: A meta-synthesis of the literature. *Perspectives on Public Management and Governance*, 1(3), 159–176. <https://doi.org/10.1093/ppmgov/gvx003>
- Boyne, G. A. (2002). Concepts and indicators of local authority performance: An evaluation of the statutory framework in England and Wales. *Public Money & Management*, 22(2), 17–24. Torfing, J., Peters, B. G., Pierre, J., & Sørensen, E. (2012). *Interactive governance: Advancing the paradigm*. Oxford: Oxford University Press.
- Smith, A. (2021). Accountability and performance in public sector governance: Revisiting the New Public Management debate. *Public Administration Review*, 81(3), 456–470.
- Kwon, Y., & Choi, S. (2023). Digital transformation in local governments: Determinants of e-reporting adoption and organizational accountability. *Information Polity*, 28(2), 121–138.
- Patrick, J. M., & Nahrgang, J. D. (2020). Work conditions and worker safety: The mediating role of trust and engagement. *Safety Science*, 128, 104740. <https://doi.org/10.1016/j.ssci.2020.104740>
- Zhou, Q., Fang, D., & Mohamed, S. (2011). Safety climate improvement: Case study in a Chinese construction company. *Journal of Construction Engineering and Management*, 137(1), 86–95.
- Yoon, S. J., & Kim, H. (2022). Integrating ESG principles into occupational safety management: Accountability implications for sustainable labor governance. *Safety Science*, 150, 105692.

- Haryanto, T., & Prabowo, D. (2023). Digital labor reporting and occupational safety accountability in Indonesian local governance. *Jurnal Administrasi Publik Indonesia*, 10(1), 55–70.
- Dwiyanto, A. (2019). *Reforming bureaucracy in Indonesia: Towards clean and accountable governance*. Yogyakarta: Gadjah Mada University Press.
- Siregar, A. P., & Lionardo, A. (2022). Strengthening public service ethics and accountability through collaborative governance: An Indonesian case study. *Asian Journal of Public Administration*, 44(3), 312–330.
- UNDP. (2022). *Human development report: Uncertain times, unsettled lives—Shaping our future in a transforming world*. New York: United Nations Development Programme.
- World Health Organization (WHO). (2021). *Occupational health: A manual for primary health care workers*. Geneva: WHO Press.