

## **Closing the Governance Gap through Fatigue Training Integration: Strengthening Social Protection in Indonesia's Ride-Hailing and Delivery Gig Work**

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### **Abstract**

Gig work has become a cornerstone of Indonesia's labour market, representing a visible and growing share of informal employment. Ride-hailing and delivery services are among the most dynamic segments, yet their rapid growth has been accompanied by long and irregular working hours, exposing drivers to chronic fatigue and heightened accident risks. Although platform-based work has generated new income opportunities, occupational safety and health (OSH) protections remain limited and fragmented across ministries. This paper presents the second phase of a multi-stage study on fatigue management in Indonesia's platform economy. Building on a prior multi-stakeholder Focus Group Discussion, this phase expands the analysis through a review of national regulations, institutional documents, and platform initiatives, complemented by a rapid synthesis of relevant literature. Findings indicate that fatigue is not only a behavioural or ergonomic issue but also a governance challenge arising from overlapping mandates between labour, transport, and social-protection agencies. While platform-led safety programmes promote awareness, their voluntary character limits systemic reach. The study proposes a National OSH Training Framework for Gig Workers, coordinated by the Ministry of Manpower and integrated with BPJS participation through digital platforms. Institutionalising standardised, app-based fatigue-management training within the social-protection system offers a pragmatic pathway to bridge current policy gaps and advance Indonesia's agenda for decent, safe, and productive work.

**Keywords:** fatigue risk, gig economy, occupational safety and health, social protection, policy coordination.

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## 1. Introduction

The so-called *gig economy*—characterised by short-term, on-demand, task-based labour mediated through mobile and app-based digital platforms—has expanded rapidly across the globe (Tan et al., 2021). While platform work offers flexibility and new income opportunities, it also introduces heightened precarity and exposure to occupational risks. Platform workers such as drivers, couriers, and domestic service providers frequently operate in regulatory blind spots where social-insurance coverage and occupational-safety oversight remain limited (Useche et al., 2025; Yoo et al., 2024).

A growing body of evidence indicates that poor working conditions—marked by economic insecurity, algorithmic control, and constant time pressure—have serious psychosocial consequences. A systematic review of more than 38,000 last-mile delivery workers found consistent associations between these factors and stress, fatigue, burnout, and reduced mental well-being (Useche et al., 2025). Other studies show that delivery riders exhibit greater vulnerability to road crashes and risk-taking behaviour than the general population (Christie & Ward, 2023; Nguyen-Phuoc et al., 2024; Salmon et al., 2023). The International Labour Organization (ILO, 2016b) and Bentley et al., (2021) have identified the gig economy as a growing concern in ergonomics and human-factors research, given the excessively long and irregular hours commonly reported by ride-hailing and delivery workers. Such schedules contribute to cumulative fatigue, slower reaction time, and impaired decision-making, all of which increase accident risk (Berneking et al., 2018; T. Chen et al., 2022). In severe cases, fatigue levels among ride-hailing drivers exceed those observed in long-haul truck drivers (Jaydarifard et al., 2024).

In Indonesia, these global patterns are intensified by the sector's rapid expansion and market dominance. According to the *Digital 2025 April Global Statshot* report by We Are Social, 66.7% of Indonesian internet users use online mobility services monthly—the highest rate globally—followed by Singapore (58.3%) and Brazil (57.7%) (Kemp, 2025). By the end of 2024, Indonesia had 88.3 million online transport users, a 6.4% increase from the previous year. The *e-Conomy SEA 2024* report by Google, Temasek, and Bain & Company further confirms Indonesia's leading role in Southeast Asia, with the gross merchandise value (GMV) of online transport and food-delivery services reaching USD 9 billion in 2024, the largest in ASEAN. Despite this remarkable growth, labour protection and occupational-safety governance for platform-based workers remain limited, leaving drivers vulnerable to excessive hours, fatigue, and safety risks (GoodStats, 2024).

These risks are further compounded by widespread informal employment. Statistics Indonesia (BPS, 2024) reported that 83.3 million Indonesians, approximately 57.95 percent of the workforce, were informal workers in 2024. Ride-hailing and delivery drivers are among this group, facing income instability, limited access to social insurance, and inadequate OSH protection. Although platforms describe drivers as “partners,” the absence of formal employment status excludes them from statutory benefits and enforcement mechanisms. This gap underscores the urgent need for a coordinated policy framework that integrates occupational safety, social protection, and fair working conditions within Indonesia's rapidly expanding platform economy.

Indonesia's current regulatory framework provides limited coverage for platform-based workers, leaving critical governance gaps across ministries and agencies such as the Ministry of Manpower (MoM), Ministry of Transportation (MoT), and the Social Security Agency for Employment (BPJS Ketenagakerjaan). These institutional boundaries result in disorganized and inconsistent protection mechanisms.

The first phase of this study, conducted through a multi-stakeholder focus group discussion (Hermawati et al., 2024), identified fatigue training as the most feasible and widely supported entry point for improving driver protection. Stakeholders from the Ministry of Manpower, BPJS, and major platform companies agreed that regulatory reform alone would be politically slow and operationally complex, whereas structured training could be implemented within existing institutional mandates. These insights directly informed the design of the present phase, which tests the feasibility of institutionalizing such training through a regulatory and policy analysis of Indonesia's OSH and social-protection systems. Yet, existing initiatives remain ad hoc, short-term, and disconnected from Indonesia's broader social protection system. The central challenge therefore lies not in designing training content, but in developing mechanisms that ensure such training is delivered systematically, monitored effectively, and institutionalized as part of the country's formal labor governance framework. Unlike employment reclassification, which remains politically sensitive and legally contested due to the *kemitraan* (partnership) model, embedding fatigue and OSH training within existing social-protection mechanisms represents a politically feasible and pragmatic alternative. This approach strengthens protection without requiring immediate changes to employment status, making it implementable within Indonesia's current legal and institutional context.

Accordingly, this study examines existing approaches to fatigue and safety training for ride-hailing and delivery workers in Indonesia, with particular attention to how such initiatives are designed, delivered, and governed. It further identifies the institutional and practical barriers that constrain the sustainable implementation of training programs within the country's current regulatory and organizational landscape. Building on this analysis, the study develops a conceptual governance framework that integrates fatigue-training delivery into Indonesia's broader social protection system. The study will contribute to advance understanding of how preventive OSH measures can be institutionalized for non-standard workers, offering actionable insights for policymakers, regulators, and platform companies seeking to strengthen the inclusiveness and coordination of national labor protection mechanisms.

## 2. Research method

This study adopted a qualitative policy and implementation analysis to examine how training can function as a mechanism of social protection against fatigue in Indonesia's ride-hailing and delivery gig sector. The approach combined document analysis and a narrative rapid review, enabling both institutional mapping and synthesis of prior research evidence. This review was not intended to be fully systematic but to rapidly synthesize key policy models, legal frameworks, and institutional challenges most relevant to Indonesia's regulatory context for platform-based work. Building upon stakeholder Focus Group Discussion conducted in 2024 (Hermawati et al., 2024), the study extended

its scope to include recent national regulations, agency reports, and platform-level initiatives, complemented by peer-reviewed studies published between 2018 and 2025.

Data for this study were collected from multiple documentary and secondary sources to ensure comprehensive coverage of institutional, regulatory, and empirical perspectives. These sources included national laws and regulations, institutional reports, platform-level initiatives, international frameworks, and peer-reviewed literature. Table 1 summarizes the data categories, examples of sources, and their specific purposes in the analysis. This triangulated evidence base enabled both policy mapping and comparative assessment across government, private-sector, and international levels.

**Table 1.** Data sources and their purposes in analysing regulatory gaps and protection mechanisms for fatigue management in Indonesia’s gig economy.

| Category                               | Source                                                                                                                                                                                                                                                                                  | Purpose in Analysis                                                                                                                          |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| National Policies and Regulations      | Law No. 6/2023 on Job Creation; Government Regulation No. 35/2021 on Fixed-Term Employment; Ministry of Transportation Regulation No. 12/2019; and Ministerial Decree KEPMENHUB KP-1001/2022.                                                                                           | To identify existing legal provisions, institutional mandates, and regulatory gaps concerning fatigue risk management and worker protection. |
| Institutional Reports                  | BPJS Ketenagakerjaan dan Kesehatan reports (2023–2025)                                                                                                                                                                                                                                  | To examine implementation practices and inter-agency coordination in current training and protection schemes.                                |
| Platform-Level Initiatives             | Grab, Gojek, and Other Platform safety and driver-training campaigns (2016–2025).                                                                                                                                                                                                       | To assess private-sector engagement, content coverage, and alignment with national OSH principles.                                           |
| International Frameworks               | ILO Convention No. 155, ILO Promotional Framework for OSH (No. 187), ILO decent work agenda, ASEAN OSHNET                                                                                                                                                                               | To benchmark Indonesia’s regulatory and training approach against international standards.                                                   |
| Academic Literature (Narrative Review) | Peer-reviewed studies retrieved from Scopus and PubMed (2018–2025) using combination Boolean keywords such as “gig economy” “platform work”, “ride-hailing”, “fatigue”, “driver fatigue”), “training”, “intervention”, “social protection”, “occupational health” “occupational safety” | To contextualize global experiences with fatigue training, policy integration, and evaluation outcomes.                                      |

Data analysis proceeded through four sequential stages—mapping, assessment, gap analysis, and integration modeling—adapted from established approaches in policy analysis (Bardach & Patashnik, 2023; OECD, 2023; Patton et al., 2015). This structured yet flexible sequence was selected to address the complexity of Indonesia’s multi-actor governance environment surrounding platform-based work. The mapping stage identified fatigue-related training mechanisms, institutional actors, and coordination structures, while the assessment stage evaluated training content, delivery methods, and governance arrangements against national OSH standards and ILO guidelines. The gap-analysis stage compared institutional mandates, budgetary authority, and regulatory instruments to reveal disjointed and overlaps among ministries, BPJS, and platforms. Finally, the integration-modeling stage synthesized these findings into a conceptual framework situating fatigue-training delivery within Indonesia’s social protection and OSH governance systems. Together, these stages align with the logic of the policy cycle—from describing the policy context to formulating coordinated solutions—while ensuring that diverse data sources are systematically analyzed to generate a coherent and actionable governance model. The overall analytical process is summarized in Figure 1.

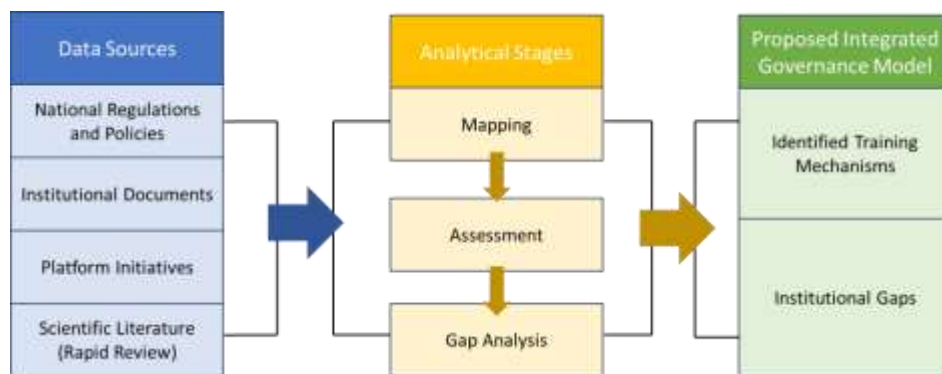


**Figure 1.** Analytical framework linking data sources and analytical stages in developing an integrated governance model for fatigue training

To ensure contextual validity and practical relevance, preliminary findings and the resulting conceptual model were reviewed by occupational safety academics, Ministry of Manpower officials, and platform representatives. Feedback from these experts informed revisions to the framework and strengthened its alignment with existing institutional arrangements and policy priorities.

### 3. Results and Discussion

#### 3.1. Synthesis of Included Studies

The reviewed studies consistently show that fatigue among gig-economy drivers is a multidimensional problem emerging from the intersection of excessive working hours, performance-based pay, and weak regulatory oversight. Evidence from diverse contexts, including Asia, America, and Europe (e.g., (T. Chen et al., 2022; De Oliveira et al., 2023; Jing et al., 2023; Laskaris et al., 2024; Useche et al., 2025; Yoo et al., 2024), demonstrates that incentive-driven algorithms, customer-rating systems, and income insecurity compel riders to prolong online hours and shorten recovery periods.

These behavioural adaptations heighten physiological fatigue, impair decision-making, and increase the likelihood of crashes and near-miss incidents.

Several studies link time pressure and algorithmic management to stress, burnout, and diminished cognitive performance, while others identify fatigue as a major predictor of unsafe riding behaviour and traffic violations (Christie & Ward, 2023; Nguyen-Phuoc et al., 2024). Comparative analyses further suggest that fatigue levels among ride-hailing and delivery drivers may exceed those of conventional transport workers such as truck drivers (Jaydarifard et al., 2024).

A second cluster of studies highlights the need for integrated and evidence-based interventions that combine education, behavioural change, and systemic regulation. (Berneking et al., 2018) emphasize that rest periods offered by ride-hailing companies are insufficient to improve driving safety, as drivers typically operate at non-traditional hours when sleepiness peaks. The American Academy of Sleep Medicine consequently calls for a multi-sectoral collaboration among platforms, regulators, and health professionals to monitor fatigue, deliver targeted education, and establish enforceable fatigue-risk management systems. Similarly, Crain et al., (2020) propose an integrative framework linking occupational health research, platform governance, and driver education to improve sleep health in the online labour sector. In China, Dang et al., (2022) introduces an algorithmic intervention *CreditToken* that optimizes pricing strategies while incorporating fatigue detection results, which illustrates how technological and economic mechanisms can reinforce safety management. From a systems perspective, Salmon et al. (2023) apply the ActorMap and AcciMap frameworks to identify eight interacting domains that shape delivery-rider safety—from app algorithms and infrastructure to regulation and culture—and develop *PreventiMaps* outlining targeted interventions. These include enhanced onboarding and training programmes, stricter enforcement, improved data systems, infrastructure redesign, payment reform, and gig-specific regulatory mechanisms. Beyond the gig economy, Ricci et al., (2016) find that occupational-safety training is most effective when focused on behavioural and health-related outcomes rather than knowledge acquisition alone

Moreover, studies from Indonesia consistently reveal that the governance of platform-based work is constrained by an absence of clear legal definitions and disconnect institutional mandates. Across analyses (Annazah et al., 2023; Hasan & Sibarani, 2023; Muhyiddin et al., 2024; Wibowo, 2023) reveal that the dominant pattern is a legal vacuum surrounding *kemitraan* (partnership) arrangements between drivers and platforms. Because current labour law defines employment strictly through the triad of *work–wage–order*, platform drivers are classified as partners rather than employees, leaving them outside statutory coverage for minimum wages, working-time regulation, and social protection. Comparative legal studies emphasise that this exclusion contradicts the intent of labour-law formation—justice, legal certainty, and expediency—and stands in contrast to precedents such as the United Kingdom Supreme Court decision recognising platform drivers as workers entitled to benefits (Hasan & Sibarani, 2023). Empirical evidence further shows that drivers choose gig work largely due to limited formal opportunities, while the state has yet to proactively align the Decent Work Agenda with non-standard employment (Annazah et al., 2023; De Ruyter & Rachmawati, 2020).

Moreover, policy-oriented research recommends urgent legal reform. Some scholars (Tobing, 2024; Wibowo, 2023) propose that the Ministry of Manpower test and redefine the “partner” versus “worker” terminology and expand the meaning of *perintah* (order) to accommodate modern employment realities. Muhyiddin et al., (2024) advocates a hybrid employment model combining flexibility with core protections such as social-security access, algorithmic transparency, and dispute-resolution mechanisms. At the same time, (Irfana et al., 2023) demonstrate that structured safety training can directly improve drivers’ workplace security—showing that regulatory clarity must be paired with operational interventions. In contrast, Orr et al., (2023) provide a cautionary perspective from Australia, where weak enforcement and regulatory inaction have enabled exploitative “necrocapitalist” dynamics in food-delivery work.

In summary, evidence shows that fatigue among ride-hailing and delivery drivers stems from excessive hours, algorithmic pressure, and weak regulation, making it a governance issue rather than an individual problem. Existing interventions, such as rest policies, safety training, and fatigue-detection technologies, remain disjointed and voluntary. Indonesian studies highlight legal ambiguity surrounding *kemitraan* (partnership) status and the absence of integrated OSH and social-protection frameworks, leaving drivers unprotected. Comparative findings suggest that meaningful reform requires legal recognition of gig workers and coordinated institutional mechanisms to ensure decent, safe, and sustainable platform work.

Viewed through the lens of the ILO Decent Work Agenda (ILO, 2016a) and the preventive approach of Conventions 155 and 187, training operates as a mechanism of social protection rather than a peripheral safety activity. By reducing exposure to fatigue-related hazards and promoting self-regulation, structured training acts as a preventive measure that complements formal insurance schemes. When formally recognized and standardized within national OSH frameworks, such training legitimizes the inclusion of platform workers in Indonesia’s broader labour-protection system. Thus, the literature establishes not only the empirical significance of fatigue but also the conceptual rationale for treating training as an institutional right within preventive social protection.

### 3.2. Current Landscape of Regulations and Institutional Frameworks

As summarized in Table 2, Indonesia’s regulatory instruments addressing social protection for platform-based gig drivers vary in scope and enforcement. In the following section, we explain each regulation in greater detail.

**Table 2.** Policy Context of Social Protection Regulations for Platform-Based Gig Drivers in Indonesia

| Regulation / Policy  | Issuing Body        | Core Focus                       | Key Provisions for Platform Drivers                                  | Relevance to Fatigue & Social Protection          |
|----------------------|---------------------|----------------------------------|----------------------------------------------------------------------|---------------------------------------------------|
| Law No. 24/2011 BPJS | National Parliament | Establishes BPJS Ketenagakerjaan | Recognizes informal workers ( <i>BPU</i> ) as eligible participants; | Legal foundation for inclusion in national social |

| Regulation / Policy                    | Issuing Body                      | Core Focus                                                      | Key Provisions for Platform Drivers                                                                                | Relevance to Fatigue & Social Protection                                                   |
|----------------------------------------|-----------------------------------|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
|                                        |                                   | & BPJS Kesehatan                                                | allows voluntary registration for gig drivers.                                                                     | protection system, though participation is self-funded.                                    |
| PP No. 35/2 (Employment Relationship)  | Government of Indonesia           | Defines employment contracts (PKWT, PKWTT, outsourcing)         | Relationship applies only if elements of job–wage–order exist; excludes platform drivers classified as “partners.” | Creates a governance gap—drivers lack protection on working hours, fatigue, and dismissal. |
| Permenhub No. 12/2019                  | Ministry of Transportation        | Safety and service standards for app-based motorcycle transport | Platforms must ensure safety, provide training, and maintain vehicle standards; defines drivers as “mitra.”        | Addresses physical safety but not working-hour limits or fatigue management.               |
| PP No. 44/2015 & Permenaker No. 5/2021 | Government & Ministry of Manpower | Implementation of BPJS Ketenagakerjaan (JKK, JKm, JHT) for BPU  | Allows gig drivers to enroll individually or collectively through platforms; regulates contribution levels.        | Provides access to accident and death benefits; coverage remains voluntary.                |
| Perpres 82/2018                        | President of Indonesia            | National Health Insurance (JKN)                                 | Includes independent workers as BPJS Kesehatan participants.                                                       | Offers health protection but not income security during fatigue-related incidents.         |
| Inpres 2/2021                          | Presidential Instruction          | Expansion of BPJS coverage                                      | Instructs ministries (Manpower, Transport) to integrate platform-based workers into BPJS programs.                 | Encourages cross-sector coordination to reduce exclusion from protection schemes.          |

### 3.2.1. Employment Classification and Labor Protection

Government Regulation No. 35 of 2021 (PP Nomor 35 Tahun 2021, 2021), issued as an implementing rule of the Job Creation Law, stipulates that an employment relationship exists only when three elements are present: a job, remuneration, and an employer's directive authority. Digital-platform companies such as Gojek and Grab assert that their relationship with drivers constitutes *kemitraan* (partnership) rather than employment because drivers control their own working time and are not under direct orders. Consequently, the protective provisions of PP 35/2021—covering working-hour limits, rest entitlements, severance pay, and minimum wages—do not apply. In practice, this exclusion allows extended online hours exceeding 10–12 hours per day to meet incentive targets, heightening fatigue and crash risk. Hence, while formal workers are protected under the Manpower Law, platform drivers remain outside OSH and working-time regulation.

### 3.2.2. Transport-Safety Regulations

Safety governance for ride-hailing drivers falls primarily under the Ministry of Transportation (MoT). Ministerial Regulation No. 12 of 2019 (Permenhub No 12 2019, 2019) formalizes motorcycle-based ride-hailing as a public service using private vehicles and mandates basic safety standards. It requires platforms to train drivers in defensive driving, ensure vehicle roadworthiness, and provide complaint centers, yet it does not impose maximum working hours or fatigue controls. Further economic regulation is provided by (KEPMENHUB-KP-1001-2022, 2022), which sets nationwide tariff zones and platform-fee ceilings to protect driver income and consumer affordability. While these instruments strengthen economic fairness and basic safety, they omit provisions on occupational health, rest schedules, or mandatory OSH integration—reinforcing sectoral separation between transport and labor oversight.

### 3.2.3. Social-Protection and BPJS Framework

Law No. 24 of 2011 established BPJS Ketenagakerjaan and BPJS Kesehatan as universal social-security institutions covering both waged (*Penerima Upah*, PU) and non-waged (*Bukan Penerima Upah*, BPU) workers. Gig drivers fall under the BPU category and may voluntarily enroll for occupational-injury (JKK), death (JKm), old-age (JHT), and health insurance (JKN) schemes. Subsequent regulations—PP No. 44/2015, Permenaker No. 5/2021, Perpres No. 82/2018, and Inpres No. 2/2021—encourage digital platforms to facilitate collective registration and auto-deduct contributions but stop short of making such participation compulsory. Some local governments (e.g., Kudus Surabaya, Simalungun, Situbondo) subsidize premiums for drivers, and a recent policy initiative would see the central government cover 50 percent of driver contributions (Antara, 2019; Gozali, 2025; Indrainsi, 2025; Metrodaily, 2025). These schemes indicate incremental progress toward inclusion but do not yet guarantee universal coverage or income security during fatigue-related incidents.

### 3.2.4. Emerging Manpower Regulation

The Ministry of Manpower has drafted a regulation on platform work that would define worker status, social-security access, working time, and OSH training. Public consultations since 2024 indicate growing policy recognition; however, the regulation has not yet been finalised. Until enacted, fatigue

management and safety training remain voluntary and commercially driven, leaving OSH obligations non-mandator.

### 3.2.5. International and Regional Framework Alignment

Indonesia's commitment to global labour standards provides a normative foundation for reform. ILO Conventions No. 155 and 187 require national OSH systems covering all workers and promoting preventive safety culture through tripartite governance. The ILO Decent Work Agenda and Recommendation No. 202 on social-protection floors reinforce workers' rights to safe and fair conditions. Regionally, ASEAN OSHNET addresses the informal economy but has not yet issued specific guidelines for platform-based transport workers. These frameworks collectively support extending OSH coverage to platform drivers through coordinated efforts among the Manpower, Transport, and Communication ministries and BPJS.

### 3.2.6. Platform-Led Safety and Training Initiatives

Platform companies operate extensive safety programmes that promote safer behaviour but do not regulate working hours or fatigue.

- **Gojek** implements the *#AmanBersamaGojek* framework centred on education, protection, and technology. Collaborations such as *Rifat Drive Labs* and *Bengkel Belajar Mitra* have reportedly trained over 350,000 drivers in defensive riding and first aid. Partnerships with Korlantas Polri and Jasa Raharja extend accident-prevention and insurance initiatives.
- **Grab** integrates safety into its *Safer Everyday Tech Roadmap*, using telematics to monitor driver behaviour and provide automated feedback. Company-reported data indicate reduced speeding and accident rates, alongside collaborations with Komnas Perempuan and Jakarta Police on safe-driving and anti-violence campaigns.
- **ShopeeFood** delivers training via *Akademi Mitra Pengemudi* and *Kelas Bintang 5*, focusing on service quality and traffic safety in collaboration with Astra's *Indonesia Ayo Aman Berlalu Lintas* campaign.

While these programmes improve awareness and safety culture, they remain voluntary corporate initiatives rather than elements of a national OSH framework. None link participation to BPJS eligibility or compliance audits, and none address work-rest balance or physiological fatigue management.

## 3.3. International Comparisons

Emerging global experiences underscore the feasibility of an integrated approach to fatigue and occupational-safety governance in platform-based work. In China, major delivery-platform operators such as *Meituan* and *Ele.me* have introduced algorithm-driven rest-prompt and log-off mechanisms for riders working extended hours, signalling private-sector recognition of fatigue as an occupational-safety risk (W. Chen, 2024; Riquelme, 2025). Empirical studies also show that algorithmic management and accelerated work-pace have contributed to burnout among China's food-delivery riders, prompting both companies and regulators to test data-driven rest enforcement (Dong et al., 2025; Kadolkar et al., 2025).

In India, the *Code on Social Security (2020)* and the *Occupational Safety, Health and Working Conditions Code (2020)* formally recognise gig and platform workers as a distinct labour category, creating a foundation for extending OSH and training provisions under national social-security schemes (IFMR, 2023; ILO, 2024). Pilot awareness programmes led by the V.V. Giri National Labour Institute have begun delivering safety and rights-awareness training to platform workers, illustrating early stages of institutional capacity building.

Within the European Union, the *Directive (EU) 2024/2831 on Platform Work* establishes stronger rights to fair working conditions, algorithmic transparency, and access to training as part of occupational rights for platform workers (Directive (EU) 2024/2831, 2024). Complementary studies, including *CrowdLearn: Online Platform Work and Skills* (CEDEFOP, 2019) and *Health, Safety, and Well-Being in Platform-Mediated Work* (Nilsen & Kongsvik, 2023), further show that structured training and preventive OSH interventions are essential to address the health and fatigue risks of digitally mediated labour. These initiatives collectively demonstrate a continental shift toward institutionalising training and OSH as core elements of platform governance rather than discretionary benefits.

These examples suggest that: (1) fatigue-management interventions can be both technologically and institutionally feasible in platform contexts; (2) formal recognition of platform workers through legislation is a prerequisite for systematic OSH and training coverage; and (3) the integration of training within regulatory and social-protection systems need not wait for full employment re-classification. For Indonesia, adapting these lessons means prioritising linkages between digital-platform data systems, certified training modules, and BPJS eligibility—building preventive capacity within existing social-protection mechanisms rather than postponing reform until employment-status debates are resolved.

### 3.4. Bridging the Gap: A Proposed Governance Model for Integration

Indonesia's approach to managing fatigue among ride-hailing and delivery drivers remains fragmented across ministries and institutions. Labour, transport, and social-protection agencies operate under separate mandates, while platform companies conduct voluntary safety campaigns outside formal occupational safety and health (OSH) frameworks. As a result, fatigue prevention is treated as corporate goodwill rather than a coordinated labour-protection obligation.

Government efforts, such as voluntary BPJS enrolment for *Bukan Penerima Upah* participants and local premium-subsidy programmes, demonstrate innovation but lack national coordination. Similarly, platform-led initiatives by Gojek, Grab, and ShopeeFood show logistical feasibility yet remain unstandardised, uncertified, and disconnected from BPJS databases. Consequently, no single institution assumes responsibility for monitoring working hours, rest compliance, or fatigue-related incidents, leaving protection partial and discretionary.

Training offers a practical mechanism to bridge these gaps. Platform companies possess the digital infrastructure to deliver education at scale, while the state holds regulatory authority to set standards and enforce compliance. Establishing a National OSH Training Framework for Gig Workers, led by the Ministry of Manpower and supported by an inter-ministerial task force linking the Ministries of

Transportation and Communication, BPJS, and law-enforcement agencies, would institutionalise this coordination. A certified, app-based microlearning curriculum could provide nationwide access, while linking completion data and driver activity metrics to BPJS dashboards would create a public–private data bridge for real-time monitoring. This linkage addresses the current asymmetry in information, where platforms monopolize safety and fatigue data, by enabling state oversight and accountability within existing institutional mandates.

Addressing these institutional and informational gaps requires a mechanism that is both operationally feasible and politically acceptable within Indonesia’s current regulatory context. Embedding training within Indonesia’s OSH and social-protection architecture would elevate fatigue management from voluntary practice to structural labour right, aligning platform-work governance with the preventive and inclusive principles of the ILO Decent Work Agenda.

#### 4. Conclusion and Recommendations

This study examined how fatigue management in Indonesia’s ride-hailing and delivery sector can be strengthened through an integrated governance approach. The analysis shows that while platform-based transport is now formally recognised, protection against fatigue remains weak due to limited coordination among labour, transport, and social-protection agencies. Addressing this policy gap, the study proposes a National OSH Training Framework for Gig Workers that links digital training delivery with BPJS systems, offering a pragmatic, politically feasible pathway to institutionalise preventive social protection

Training represents the most feasible and scalable entry point for integrating preventive social protection into the gig economy. Platform companies already have the digital infrastructure to deliver training widely, while the state holds the authority to standardize, certify, and monitor its implementation. Institutionalizing fatigue-management training within Indonesia’s OSH and BPJS frameworks would shift it from a voluntary initiative to a structural labour right, aligning national practice with the preventive and inclusive principles of the ILO Decent Work Agenda and Conventions No. 155 and 187.

At the same time, this study acknowledges the broader debate on the limitations of training as a standalone intervention. Evidence from occupational-safety research (Ricci et al., 2016) shows that training often produces modest or short-lived behavioural change when systemic pressures—such as low pay, incentive-based algorithms, and unstable working conditions—persist. Therefore, the proposed National OSH Training Framework should be viewed as a first step in a broader governance agenda to align economic incentives, platform accountability, and worker protection. Embedding training within social-protection and regulatory systems can lay the institutional foundation for reform, but sustained improvement will depend on complementary measures addressing remuneration, algorithmic transparency, and workload regulation.

Future research and pilot initiatives should address several limitations identified in this study. First, it relied primarily on secondary sources and qualitative stakeholder data, which limited the ability to measure the direct impact of existing interventions on driver fatigue or safety outcomes. Second,

the documentary data varied in scope and quality, many institutional reports and platform disclosures lacked standardized indicators or independent verification, which may affect the comparability of evidence. Third, stakeholder perspectives collected during earlier consultations may not fully represent the diversity of gig workers, as participation tended to involve organized driver associations or government-linked institutions rather than unaffiliated drivers. Future research should adopt empirical or mixed-method designs, such as longitudinal studies or pilot evaluations of digital training modules, to assess behavioural and safety impacts. Comparative regional studies across ASEAN would also strengthen understanding of policy transferability and inform regional standard-setting.

#### 4.1. Policy Recommendations

To better protect ride-hailing and delivery workers from fatigue-related risks, policymakers and regulators must adopt coordinated and preventive measures. The following priority actions are recommended to strengthen Indonesia's regulatory and institutional framework for OSH in platform-based work:

- 1) Develop and Pilot a National OSH Training Framework for Platform Workers. Led by the Ministry of Manpower, this initiative should establish standard competencies, certification procedures, and digital-delivery formats for fatigue and safety training across all platforms. The framework's initial rollout should include multi-city pilots (e.g., Jakarta, Surabaya, Medan) within 12 months, conducted through selected platforms to test interoperability between training completion data and BPJS enrolment systems, with oversight from an Inter-Ministerial Task Force.
- 2) Establish an Inter-Ministerial Task Force. Coordination among the Ministry of Manpower, Ministry of Transportation, Ministry of Communication and Informatics, BPJS, and law-enforcement agencies is essential to align data systems, enforcement mechanisms, and training oversight.
- 3) Institutionalise Integration and Incentives within the OSH and Social-Protection Systems. Link completion of certified fatigue-management training to BPJS Ketenagakerjaan participation records to enable automatic verification and strengthen compliance monitoring. Tie these verified training records to platform licence renewal, safety-rating schemes, and other regulatory incentives. For drivers, completion of certified fatigue-management training could unlock a 'Safety-Certified' digital badge within the app, offering algorithmic priority for orders, access to premium trip categories, or eligibility for government-supported insurance discounts. For platform companies, compliance could be assessed through public OSH performance ratings or by linking licence renewal to achieving a minimum 90% driver-certification rate. These dual incentives would reward individual compliance while motivating platforms to invest in consistent, system-wide implementation. Establish shared financing mechanisms combining platform levies, corporate-social-responsibility funds, and government contributions to ensure long-term sustainability of training delivery and oversight. A practical option is to introduce a small, mandatory levy per active driver, collected by platforms and channelled into a National OSH and Training Fund managed by BPJS Ketenagakerjaan. The

levy could be automatically deducted from digital transactions or incentive payouts, creating a predictable revenue stream for training development, certification, and monitoring. Government co-funding could support initial implementation, while CSR contributions from platforms and associated industries (e.g., logistics, insurance) could strengthen the fund's long-term capacity and inclusivity.

- 4) Adopt App-Based and Gamified Learning Modules. Microlearning content embedded within driver applications can reduce time and literacy barriers, ensuring equitable access to OSH education nationwide.

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