Human resources management strategies in enhancing transportation performance and safety in Indonesia

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Abstract
Purpose: This study explores the strategic role of Human Resource Management (HRM) practices training and development, performance management, and organizational innovation in improving transportation performance and safety in Indonesia, while examining the moderating effect of employee welfare amid growing digital transformation and rising safety standard demands.

Methodology: A quantitative approach was employed using Partial Least Squares Structural Equation Modeling (PLS-SEM). Data were collected from 360 respondents working in the land transportation sector across Indonesia through structured questionnaires.

Results: The findings confirm that training and development, as well as performance management, significantly influence both organizational innovation and transportation safety. Organizational innovation also positively affects transportation performance, which in turn enhances safety. However, the moderating effect of employee welfare on the innovation–performance relationship was found to be statistically insignifican.

Conclusions: High-quality HRM practices in training and performance management enhance operational performance and safety in Indonesia's transportation sector. However, innovation's full benefits require stronger welfare systems and integrated safety training, performance tracking, and inclusive innovation within HR strategies for workforce resilience.

Limitations: This study finds employee welfare has not significantly moderated transportation performance through innovation. Most welfare initiatives remain basic and unaligned with strategic agendas, revealing a gap between employee well-being and organizational goals that may hinder long-term innovation sustainability.

Contribution: This study validates the impact of training and performance management on transportation innovation and safety in developing countries, offering a framework for aligning HR strategies with digitalization and safety goals while emphasizing welfare policies that actively support innovation and performance excellence.

Keywords: *Employee Welfare, Organizational Innovation, Performance Management, Training, Transportation Performance, Transportation Safety*

1. Introduction

Human Resource Management (HRM) plays a critical role in motivating employees and enhancing organizational performance (Alenzi, 2023; Batta, Bandameeda, & Parayitam, 2023). While many studies have examined the direct impact of HRM practices, such as training, compensation, and performance management, on employee outcomes, most have been conducted in Western or European contexts. The exploration of HRM in Indonesia's transportation sector remains limited, particularly regarding how HR strategies influence operational efficiency and safety outcomes. Indonesia's land transportation sector, which is vital for economic connectivity, continues to face operational inefficiencies, service delays, and safety risks (Nafi'ah, 2020). These issues undermine the competitiveness and user satisfaction. Studies have shown that HRM quality significantly affects transportation performance (Ding, Kam, Zhang, & Jie, 2015); however, many companies struggle with underdeveloped HR practices, including insufficient training, weak performance systems, and low employee welfare (Batarlienė, Čižiūnienė, Vaičiūtė, Šapalaitė, & Jarašūnienė, 2017).

The rise of digital platforms and mobile-based services has disrupted traditional transportation business models, emphasizing the need for workforce adaptability. In response, Indonesia's Ministry of Transportation has prioritized skills such as digital literacy, foreign languages, and interpersonal capabilities to prepare the workforce for these changes in the transportation sector. This study contributes theoretically and practically by analyzing how HRM practices, specifically training, performance management, and organizational innovation, affect transportation performance and safety, while also evaluating the role of employee welfare as a moderating factor.

1.1. Research Gap

Despite the growing interest in HRM in the transportation sector, gaps remain in understanding its strategic role in Indonesia's dynamic, digitalized transport environment. Prior studies often emphasize technical training and leadership but overlook the broader HRM frameworks that integrate innovation and employee well-being. In particular, there is limited research on how digitalization transforms HR practices and its implications for safety and performance outcomes in transportation industries. This study addresses these gaps by examining the relationships among T&D, Performance Management, organizational innovation, and transportation performance, with a focus on safety and the moderating effect of employee welfare. The findings are intended to guide transportation companies in developing more adaptive and sustainable HRM strategies aligned with digital and global challenges.

2. Literature review and hypothesises development

2.1. The Influence of Training and Development on Organizational Innovation

Training and development equip employees with updated knowledge and skills that are essential for fostering creativity and problem-solving. According to the Human Capital Theory (Becker, 1993), investing in employee capabilities directly contributes to innovation through improved cognitive and technical competencies. M. K. D. Putra (2019) confirm that targeted training enhances innovative behavior in transportation sectors.

H1: Training and Development (X1) have a positive influence on Organizational Innovation (M1)

2.2. The Influence of Performance Management on Organizational Innovation

Performance management systems play a dual role in accountability and motivation. Jemmy, Muhdaliha, Lestari, Riyadi, and Kusnawan (2025) note that structured feedback mechanisms promote a culture of continuous improvement, which supports innovation. Susanthi and Seruni (2016), while concurring on the importance of structured evaluation, highlighted the role of employee recognition in amplifying innovative outputs. These findings complement each other by suggesting that performance systems that not only evaluate but also empower employees are more likely to foster innovation. A cross-study comparison revealed that innovation flourished under performance frameworks that emphasized developmental feedback rather than punitive oversight.

H2: Performance Management (X2) has a positive influence on Organizational Innovation (M1)

2.3. The Influence of Training and Development on Transportation Safety

Training is fundamental for equipping employees with the competencies required to manage safety-critical situations. Bęś and Strzałkowski (2024) highlight the correlation between hazard awareness training and safety performance in public transportation. Intifada (2025) provides further quantitative evidence by demonstrating a significant reduction in accidents following structured training interventions. Interestingly, while Bęś and Strzałkowski (2024) focused on cognitive aspects (awareness), Intifada (2025) emphasized procedural compliance, suggesting that comprehensive training should address both mindset and behavior. The synthesis implies that multifaceted training approaches are more effective in enhancing transport safety.

H3: Training and Development (X1) have a positive influence on Transportation Safety (Y)

2.4. The Influence of Performance Management on Transportation Safety

Performance management can be a powerful tool for reinforcing safety compliance when safety indicators are included in evaluation metrics. Rahmad, Sihombing, Sonny, and Sijabat (2024) argue that clear safety benchmarks in appraisals reduce deviations from standard procedures. Ibrahim, Logan, Koppel, and Fildes (2024) further support this by showing that transportation firms with strong safety-aligned performance reviews report fewer accidents. The convergence of these findings supports the view that performance management acts not only as a control mechanism but also as a cultural reinforcer of safety.

H4: Performance Management (X2) have a positive influence on Transportation Safety (Y)

2.5. The Influence of Organizational Innovation on Transportation Performance

The relationship between innovation and operational efficiency in transportation is well documented. Syaputra and Sutabri (2024) underline that the adoption of digital tracking systems enhances logistical coordination and reduces delivery time. Purbasari, Novel, and Kostini (2023) find that digitalization, especially automation in fleet and route planning, significantly improves service quality. Both studies suggest that technological innovation in transportation enhances efficiency and adaptability. However, Purbasari et al. (2023) add that innovation must be supported by adequate human capital to yield its full benefits, indicating a possible interaction between innovation and workforce readiness.

H5: Organizational Innovation (M1) has a positive influence on Transportation Performance (M2)

2.6. The Influence of Transportation Performance on Transportation Safety

Transportation performance, particularly in terms of system efficiency and standardization, directly influences the safety outcomes. Aloini, Colladon, Gloor, Guerrazzi, and Stefanini (2021) observes that improved logistics coordination reduces exposure to hazardous conditions. Similarly, Fadlan, Kamaruddin, and Arifai (2024) demonstrate that high transportation performance correlates with fewer accidents and service disruptions. Together, these studies indicate that safety is not an isolated metric but rather a by-product of well-executed operational planning.

H6: Transportation Performance (M2) have a positive influence on Transportation Safety (Y)

2.7. The Moderating Role of Employee Welfare in the Relationship between Organizational Innovation and Transportation Performance

Employee welfare has emerged as a contextual factor that strengthens organizational outcome. Wulandari, Ali, and Hendayana (2024) show that when innovation initiatives are paired with strong employee support systems, such as health benefits and career development opportunities, the resulting performance gains are more sustainable. In contrast, Nilsen, Dugstad, Eide, Gullslett, and Eide (2016) cautioned that innovation without parallel welfare improvements may lead to resistance or disengagement. A critical synthesis of these perspectives suggests that employee welfare may buffer the strain associated with innovation-driven change, thereby enabling smoother performance improvement.

H7: Employee Welfare (Z) moderates the relationship between Organizational Innovation (M1) and Transportation Performance (M2)

3. Methodology

3.1. Research Design

This study adopted a quantitative explanatory research design to investigate the causal relationships among variables. Explanatory research is used to explain the interrelationships among the constructs (Zanra & Sufnirayanti, 2024). The instrument used was a structured questionnaire built on validated scales from the prior literature, covering constructs such as training and development, performance management, organizational innovation, employee welfare, transportation performance, and safety (Putlely, Lesnussa, Wattimena, & Matdoan, 2021). Each item was rated using a 5-point Likert scale, from 1 = "Strongly Disagree" to 5 = "Strongly Agree."

3.2. Population and Sample

The population consisted of employees from Indonesia's transportation sector, both operational and managerial employees. Purposive sampling was applied to select individuals meeting the following criteria: minimum one year of experience, exposure to HRM or operations, and working in companies implementing formal HR practices. According to Hair Jr et al. (2021), for PLS-SEM analysis, the recommended minimum sample size is ten times the largest number of structural paths directed at a particular construct. With 36 indicators, a minimum of 360 respondents was required.

3.3. Data Collection Techniques

Primary data were gathered using structured questionnaires, and secondary data were sourced from peer-reviewed journals, government reports, and HRM literature. The questionnaire was validated through the following:
1) **Expert review** for content validity
2) **Pilot testing** with 30 respondents
3) **Construct reliability** using Cronbach's Alpha (> 0.70) and Composite Reliability (> 0.70)
4) **Convergent validity** via AVE (> 0.50)
5) **Discriminant validity** via Fornell-Larcker and HTMT

3.4. Data Analysis Technique

The data were analyzed using Structural Equation Modeling (SEM). SEM is a statistical method used to construct and test causal models by integrating regression, factor, and path analyses. This approach allows for the simultaneous estimation of relationships between latent variables, evaluation of indicator loadings for each construct, and calculation of the overall path model (Putlely et al., 2021). The analysis was conducted using SmartPLS software, which supports SEM-based data processing.

3.5. Research Model

The research model is grounded in theories such as Human Capital Theory (Becker, 1993), Social Exchange Theory (Blau, 1964), and Resource-Based View (Barney, 1991), which support the importance of HRM in improving innovation and firm performance. The relationships modeled between training, performance management, innovation, employee welfare, and transportation performance/safety are supported by recent studies (Ibrahim et al., 2024; Rizaldy, Sihombing, Candra, & Gultom, 2024; Wulandari et al., 2024).
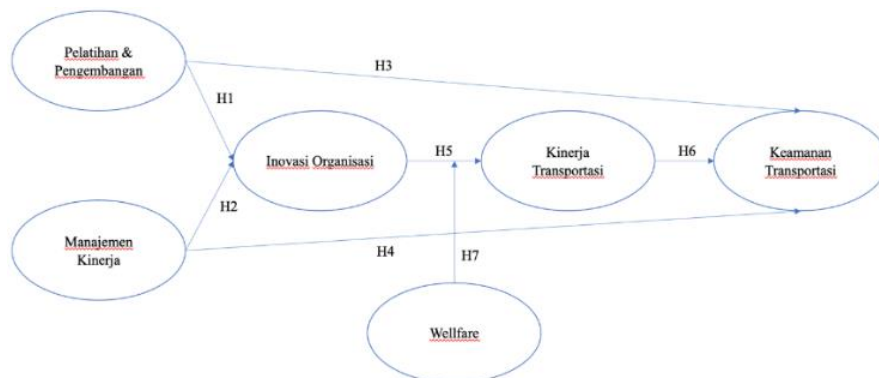

Figure 1. Framework

4. Results and discussion

4.1. Outer Model Test

The outer model was evaluated to analyze the relationship between the latent variables and their corresponding indicators, also known as the measurement model. To assess the outer model, tests of validity and reliability were performed. Within the Partial Least Squares (PLS) approach, two key types of validity are considered: convergent validity and discriminant validity. Convergent validity assesses the extent to which indicators intended to measure the same construct produce similar results. In contrast, discriminant validity evaluates whether indicators associated with different constructs are not highly correlated with one another. These evaluations help ensure that the measurement model is of high quality and reliable for further analyses.

4.2. Validity Test

Convergent validity was assessed using outer loading values. An indicator is considered valid if its outer loading is ≥ 0.70. Conversely, indicators with loading values ≤ 0.70 were deemed invalid. Based on the test results using SmartPLS version 4.1, the following findings were obtained.

4.2.1. Validity Test for the Training and Development Variable

The Training and Development construct in this study was measured using six (6) indicators. The outer loading values for each indicator were calculated, and the results are as follows.

Table 1. Validity Test for the Training and Development Variable

Variable/Dimension/Indicator	Loading Factor	Description
The training was delivered by competent instructors	0.894	Valid
The training materials were easy to understand	0.904	Valid
The training was relevant to daily job tasks	0.870	Valid
The training content helped in completing work-related duties	0.918	Valid
The training increased self-confidence	0.905	Valid
The training had a positive impact on job performance	0.913	Valid

Source: Processed by Author (2025)

Based on the validity test results presented in table 1, the Training and Development variable demonstrates that each dimension and indicator has an outer loading value of ≥ 0.50. No indicator fell below the 0.50 threshold. Therefore, it can be concluded that all six indicators used to measure Training and Development meet the criteria for convergent validity.

4.2.2. Validity Test for the Performance Management Variable

The Performance Management construct in this study was measured using six (6) indicators. The outer loading values obtained from the analysis were as follows:

Table 2. Validity Test for the Performance Management Variable

Variable/Dimension/Indicator	Loading Factor	Description
Performance goals are clear and measurable	0.835	Valid
I have a good understanding of the performance objectives	0.879	Valid
I regularly receive performance feedback	0.846	Valid
The feedback I receive helps improve my performance	0.899	Valid
Rewards are based on performance achievements	0.924	Valid
Rewards are given fairly	0.902	Valid

Source: Processed by Author (2025)

Based on the validity test results shown in table 2, the Performance Management variable demonstrates that each dimension and indicator has a loading factor ≥ 0.50, with no values falling below this threshold. Therefore, it can be concluded that all six indicators used to measure Performance Management satisfy the requirements for convergent validity.

4.2.3. Validity Test for the Organizational Innovation Variable

The Organizational Innovation construct in this study was measured using six (6) indicators. The loading factor results for each indicator were as follows:

Table 3. Validity Test for the Organizational Innovation Variable

Variable/Dimension/Indicator	Loading Factor	Description
The company quickly adopts new technologies	0.852	Valid
Technology helps me work more productively	0.868	Valid
Work processes encourage the generation of new ideas	0.900	Valid
I am supported to try innovative work methods	0.896	Valid
The company culture promotes innovation	0.903	Valid
New ideas are appreciated in the workplace	0.906	Valid

Source: Processed by Author (2025)

Based on the validity test results in table 3, the Organizational Innovation variable shows that all dimensions and indicators have loading factor values of ≥ 0.50. None of the indicators fell below this threshold. Therefore, it can be concluded that the six indicators used to measure Organizational Innovation met the criteria for convergent validity.

4.2.4. Validity Test for the Transportation Performance Variable

The Transportation Performance construct in this study was measured using six (6) indicators. The results of the outer loading analysis for each indicator are as follows.

Table 4. Validity Test for the Transportation Performance Variable

Variable/Dimension/Indicator	Loading Factor	Description
Transportation services are punctual	0.778	Valid
Departure and arrival schedules are well-organized	0.829	Valid
Transportation operations run smoothly	0.876	Valid
Delivery processes are carried out within optimal timeframes	0.878	Valid
I am satisfied with the quality of service.	0.799	Valid

Source: Processed by Author (2025)

Based on the validity test results in table 4, the Transportation Performance variable shows that each dimension and indicator has a loading factor value of ≥ 0.50, and none fall below this threshold. Therefore, it can be concluded that the six indicators used to measure Transportation Performance met the convergent validity criteria.

4.2.5. Validity Test for the Welfare Variable

The Welfare variable in this study was measured using six (6) indicators. The results of the outer loading analysis for each indicator are as follows.

Table 5. Validity Test for the Welfare Variable

Variable/Dimension/Indicator	Loading Factor	Description
The company provides employee wellness programs.	0.824	Valid
The wellness programs are highly beneficial.	0.868	Valid
I receive incentives that reflect my contributions.	0.844	Valid
The incentives motivate me to perform better.	0.862	Valid
The company supports work-life balance.	0.769	Valid
Flexible working hours are not burdensome.	0.859	Valid

Source: Processed by Author (2025)

Based on the results of the validity test in table 5, the welfare variable has loading factor values of ≥ 0.50 for all its dimensions and indicators. None of the indicators fell below this threshold. Thus, it can

be concluded that the six indicators used to measure welfare successfully met the convergent validity criteria.

4.2.6. Validity Test for the Transportation Safety Variable

The Transportation Safety variable in this study was assessed using six (6) indicators. The results of the outer loading analysis for these indicators are as follows.

Table 6. Validity Test for the Transportation Safety Variable

Variable/Dimension/Indicator	Loading Factor	Description
The company complies with safety standards.	0.848	Valid
Safety procedures are strictly implemented.	0.912	Valid
The company responds quickly to incidents.	0.905	Valid
There are clear procedures in place to handle incidents.	0.935	Valid
Safety is a top priority within the organization.	0.924	Valid
Employees have a high level of safety awareness.	0.886	Valid

Source: Processed by Author (2025)

Based on the validity test results in table 6, the Transportation Safety variable shows that all dimensions and indicators have loading factor values of ≥ 0.50, with no indicators falling below this threshold. Therefore, it can be concluded that the six indicators used as instruments for Transportation Safety met the criteria for convergent validity.

4.3. Reliability Test

The Cronbach's Alpha and Composite Reliability values for the variables Training and Development (X1), Performance Management (X2), Organizational Innovation (M1), Transportation Performance (M2), Welfare (Z), and Transportation Safety (Y) are as follows:

Table 7. Reliability Test

	Cronbach's alpha	Composite reliability (rho_c)
Organizational Innovation	0.946	0.957
Transportation Safety	0.954	0.963
Transportation Performance	0.914	0.933
Performance Management	0.942	0.954
Training and Development	0.954	0.963
Employee Welfare	0.915	0.934

Source: Processed by Author (2025)

Based on the reliability test results presented in table 7, the Cronbach's alpha values for all constructs in this study, namely, Training and Development (X1), Performance Management (X2), Organizational Innovation (M1), Transportation Performance (M2), Welfare (Z), and Transportation Safety (Y), were all ≥ 0.70. Therefore, it can be concluded that the instruments used in this study were reliable.

4.4. Coefficient of Determination (R²)

The coefficient of determination (R^2) measures the proportion of variance explained by the model and is expressed as a value between 0.0 and 1.0. The closer the value is to 1.0, the better the model's explanatory power

Table 8. Hasil Coefficient of Determination (R²)

	R-square	R-square adjusted
Organizational Innovation	0.600	0.598
Transportation Safety	0.631	0.629
Transportation Performance	0.576	0.573

Source: Processed by Author (2025)

Based on table 8, the Organizational Innovation model produced an R² value of 0.600 or 60.0%, which falls into the strong category. Meanwhile, the R² value for the Transportation Safety variable (Y) is 0.631 or 63.1%, which is also classified as strong. Additionally, the R² for the Transportation Performance variable (M2) is 0.576 or 57.6%, which is likewise considered to be strong. Therefore, it can be concluded that the model used is quite robust, indicating a strong predictive accuracy.

4.5. Hypothesis Testing

The purpose of this test was to analyze the relationships among the variables in this study, which include T&D (X1), Performance Management (X2), Organizational Innovation (M1), Transportation Performance (M2), Welfare (Z), and Transportation Safety (Y). The hypothesis testing results are based on data analysis conducted using the Partial Least Squares (PLS) method with SmartPLS software version 4.1.0.0. Figure 1 presents a path diagram illustrating the output from the hypothesis testing based on the PLS analysis.
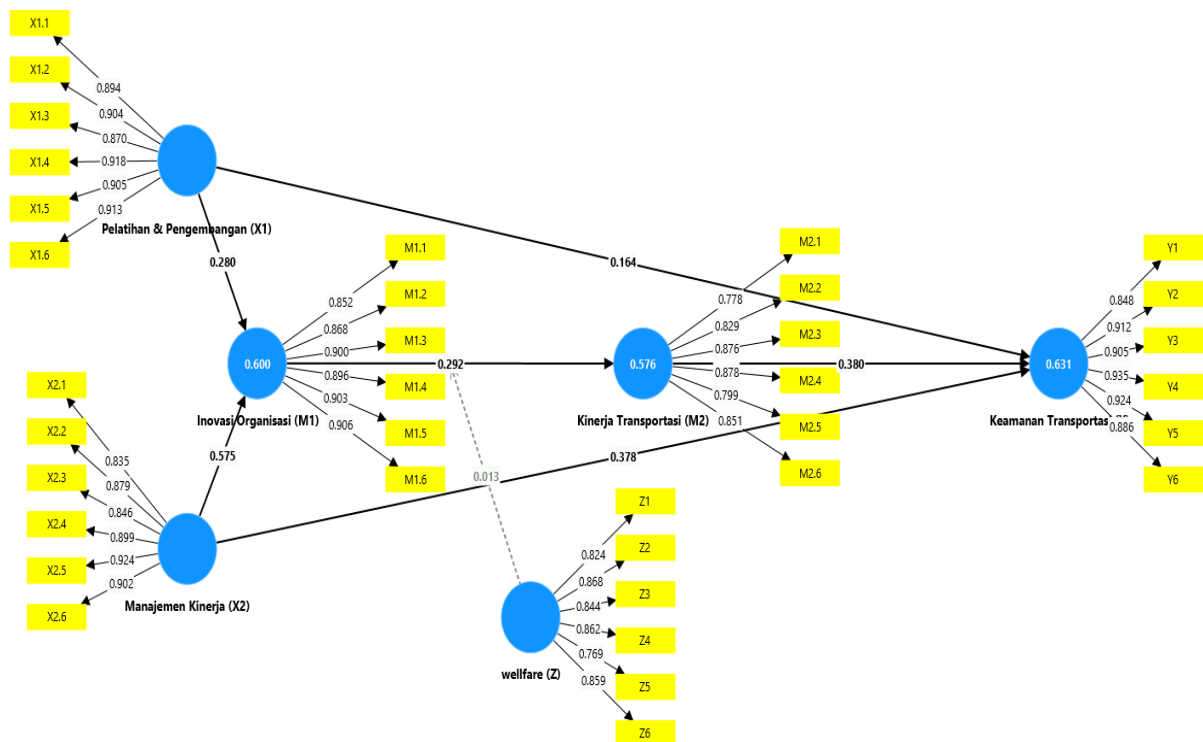

Figure 2. Path Diagram
Source : Processed by Author (2025)

Based on data processing results using SmartPLS version 4.1.0.0, as shown in the bootstrapping output in Figure 2 above and detailed further in Table 9 (direct effects), the findings of this study are elaborated as follows:

Table 9. Hypothesis Testing

Hypothesis	Original Sample	Standard Deviation	T Statistics	P-values (1 Tail)	Conclusion
Training and Development (X1) -> Organizational Innovation (M1)	0.28	0.032	3.496	0.000	H1 Accepted
Performance Management (X2) -> Organizational Innovation (M1)	0.575	0.048	11.907	0.000	H2 Accepted
Training and Development (X1) -> Transportation Safety (Y)	0.164	0.051	3.216	0.001	H3 Accepted
Performance Management (X2) -> Transportation Safety (Y)	0.378	0.065	5.831	0.000	H4 Accepted
Organizational Innovation (M1) -> Transportation Performance (M2)	0.292	0.079	3.701	0.000	H5 Accepted
Transportation Performance (M2) -> Transportation Safety (Y)	0.38	0.052	7.339	0.000	H6 Accepted
Welfare (Z) x Organizational Innovation (M1) -> Transportation Performance (M2)	0.013	0.03	0.44	0.660	H7 Rejected

Source : Processed by Author (2025)

4.5.1. Hypothesis 1
The results indicate that training and development positively affect organizational innovation. In Indonesia, many transportation companies provide insufficient training for their employees. According to Wulandari et al. (2024), quality training enhances employees' ability to adopt new technologies and to develop more innovative work processes. By improving the quality of training, companies can foster innovation that positively affects organizational performance.

4.5.2. Hypothesis 2
Effective performance management can create an environment that encourages innovation, as noted by Alif and Ahmadi (2024), who found that data-driven performance evaluation systems help identify innovation requirements within organizations. In Indonesia's transportation sector, companies that implement performance-based management systems tend to be more adaptable to change and innovation. Effective performance management practices boost employee accountability and creativity. By adopting better performance management systems, companies can encourage employees to be more innovative in their task completion.

4.5.3. Hypothesis 3
This study supports the findings of Amanda and Susilawati (2024) that investment in safety training reduces transportation accidents. Training and development have a positive impact on transportation safety. This is reinforced by Kurniawan, Darmawati, and Puspita (2024), who state that quality training improves employee awareness and skills regarding safety procedures. However, many Indonesian transportation companies still lack adequate safety-training programs. According to Pardosi, Sibarani, and Bangun (2021), structured training programs enhance employee awareness of the importance of workplace safety. By increasing the quality and frequency of training, companies can better prepare their employees for emergency situations.

4.5.4. Hypothesis 4
Good performance management has been proven to improve the safety of transportation. Sahara and Putri (2023) found that strict oversight of worker performance directly reduces workplace accidents. Many Indonesian transportation firms still lack effective performance management systems. Kusuma, Zahiraa, Tri, and Radianto (2024) argue that solid performance management practices increase employee accountability and safety awareness. Implementing such systems ensures that employees pay closer attention to safety procedures, thereby reducing the risk of accidents.

4.5.5. Hypothesis 5
This study aligns with Barinta, Lestari, and Kharisma (2024), who found that transportation companies adopting organizational innovation experience significant improvements in their operational efficiency and service performance. In Indonesia, innovation adoption in the transportation sector is limited. Budianto et al. (2022) suggest that implementing new technologies such as real-time monitoring systems and advanced navigation tools can boost operational efficiency and customer satisfaction. By enhancing innovation adoption, companies can markedly improve their transportation performance.

4.5.6. Hypothesis 6
The findings agree with D. D. Putra, Aufaa, Luthfiyah, and Sahara (2023), who showed that higher transportation performance positively influences the overall safety of transportation systems. Many transportation companies in Indonesia face operational inefficiencies. Jozan, Ghorbani, Khalid, Lotfata, and Tabesh (2023), found that improved transportation performance can reduce accident risks and enhance safety. By increasing operational efficiency, companies can ensure safe and reliable transportation services.

4.5.7. Hypothesis 7
The results show that the interaction between employee welfare and organizational innovation does not significantly affect the transportation performance. This could be due to suboptimal innovation implementation or employees not fully experiencing the benefits. According to Wulandari et al. (2024), organizational performance is more directly influenced by factors such as training and performance management than by variable interactions. In many Indonesian transportation firms, innovation adoption remains limited, so its interaction with employee welfare has yet to yield a meaningful impact. Therefore, companies must improve innovation adoption and ensure that employees directly benefit from it.

5. Conclusions
5.1. Conclusion
This study emphasizes the significant role of Human Resource Management (HRM) strategies, particularly those focused on training and development, performance management, and organizational innovation, in improving safety and operational efficiency within Indonesia's transportation sector. As the transportation industry undergoes rapid digital and structural transformations, HRM has become a critical enabler for ensuring that the workforce adapts effectively to technological and organizational changes. The practical implications of this study for public transportation operators are multifaceted. First, investing in digital-based driver safety training is vital not only to enhance driver skills but also to reduce accident rates, improve passenger safety, and align with global transportation safety standards. Training programs should include modules on defensive driving, fatigue management, and emergency response, all supported by e-learning platforms to facilitate accessibility and consistency of training.

Second, the adoption of real-time performance tracking systems for personnel and vehicles enables operators to monitor key performance indicators (KPIs), such as punctuality, service quality, and safety compliance. These technologies support evidence-based decision-making, allowing managers to identify underperformance early and provide timely intervention or incentives. Third, promoting bottom-up innovation through mechanisms such as employee suggestion schemes and cross-functional innovation teams fosters a culture of participation and improvement. Such inclusive approaches not only generate practical solutions but also enhance employee engagement and ownership of safety and performance. Additionally, the integration of HR analytics tools can help forecast manpower needs, identify skill gaps, and optimize workforce planning. Targeted wellness initiatives, including health screenings, mental health support, and work-life balance programs, are essential for improving job satisfaction and retention, particularly among frontline workers. Altogether, these strategies present a comprehensive HRM framework that can enhance the long-term competitiveness, sustainability, and public trust in Indonesia's national transportation systems.

5.2. Limitations

This study also reveals that employee welfare has not yet become a key factor in driving innovation in Indonesia's transportation sector. Although training and performance management clearly influence performance and safety, welfare programs are limited in scope and impact. Most companies still focus on basic benefits, such as health insurance or attendance-based bonuses, without integrating welfare into broader innovation or performance strategies, indicating a disconnect between employee needs and organizational policies. Transportation workers often face high-risk and physically demanding environments. Without adequate welfare, such as mental health support, family assistance, or ergonomic workspaces, employee morale and focus may decline. Consequently, their ability to innovate or maintain consistent performance may be reduced.

To address this issue, transportation companies and policymakers should reform welfare strategies as part of strategic HR planning. For example, wellness programs could be linked to innovation participation. HR data can also guide targeted support based on job type and risk level. Incentives, such as innovation rewards, psychological support, and flexible leave policies, may foster a more engaged and innovative workforce. Improving employee welfare is not merely about offering benefits; it is about creating a work environment that supports long-term safety, adaptability, and productivity. Employees who feel valued and supported are more likely to contribute ideas, take responsible risks, and remain loyal to their organization. Therefore, enhancing welfare should be viewed as a strategic driver of innovation and improved transportation outcomes.

5.3. Recommendations

Further research is needed to explore other factors that can strengthen the link between innovation and transportation efficiency, as well as how regulations can better support the sustainable implementation of HRM strategies in this sector.

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