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Analysis of the Implementation of Contractor Safety Management System (Csms) on the Readiness to Implement Yantek Vendor Work After Natural Disasters

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Keywords
Contractor Safety Management System, readiness for work implementation, Yantek vendors, K3 culture, *safety behavior*, post-natural disaster.

Abstract
This study aims to analyze the effect of implementing the Contractor Safety Management System (CSMS) on the readiness of Yantek vendors to carry out their work after natural disasters. The research background is based on the high occupational safety risks in post-disaster conditions, which require the readiness of integrated work safety systems, behaviors, and controls. This study employs a quantitative approach through a survey of 88 respondents consisting of Yantek vendor management and workers, project supervisors, K3L personnel, and CSMS auditors. Data analysis was conducted using the Partial Least Squares–Structural Equation Modeling (PLS-SEM) method with the assistance of SmartPLS software. The results showed that CSMS and safety behavior have a positive and significant effect on the readiness to carry out vendor work. Furthermore, K3 culture, the availability of work equipment, risk management, and supervisory patterns were found to significantly mediate the effect of CSMS on post-disaster work readiness. These findings confirm that the successful implementation of post-disaster work is highly dependent on the effectiveness of CSMS implementation, supported by safety behaviors and comprehensive K3 support systems.

INTRODUCTION

Safety challenges intensify significantly in post-disaster scenarios. Work environments are often characterized by damaged infrastructure, limited facilities, immense pressure for rapid service restoration, and heightened operational demands—all of which contribute to elevated accident risks. In the electricity sector, particularly for technical service (Yantek) work, these risks are compounded by activities on live power grids, difficult terrain, and unpredictable weather. Internal factors, including workers' limited understanding of K3 procedures, inadequate supervision, and non-compliance with safety standards, intertwine with external factors such as infrastructure damage and hazardous post-disaster geography (Goodluck et al., 2025; Yimam, 2025). This combination can severely undermine vendor readiness to perform their duties safely and effectively (Reason, 2016; Cooper, 2018). An ineffective safety management system in such contexts exponentially increases the risk of accidents and operational failures.

Occupational safety issues become increasingly complex when work is conducted in post-disaster situations (Brooks et al., 2019; Fardhosseini et al., 2015; Uddin & Pradhananga, 2019). Damaged environmental conditions, limited facilities, pressure for rapid service recovery, and high work demands are factors that elevate the risk of workplace accidents

(Carrasco & O'Brien, 2023; Safapour & Kermanshachi, 2019; Uddin et al., 2023). In the electricity sector, especially in engineering service work (Yantek), the risk increases because work is often carried out on active power grids, difficult-to-access terrain, and under uncertain weather conditions. Internal factors such as limited worker understanding of K3 procedures, weak supervision, and non-compliance with safety standards—combined with external factors such as infrastructure damage and post-disaster geographical challenges—can reduce vendors' readiness to perform their duties effectively (Reason, 2016; Cooper, 2018). Without an effective safety management system, the likelihood of work accidents and operational disruptions increases.

The consequences of these safety failures extend beyond individual worker welfare, directly impacting organizational performance and public service continuity (Hallowell & Gambatese, 2010). Work accidents can cause critical delays in restoring essential services, increase operational costs, result in material losses, and erode public trust in utility providers. Furthermore, safety incidents carry significant legal and reputational risks for both the principal company and its vendors. In a post-disaster context, vendor unpreparedness can prolong community recovery and hinder socio-economic rehabilitation (Mohammadfam et al., 2017). Therefore, a structured occupational safety management approach through effective CSMS implementation is paramount for ensuring work readiness and the successful execution of post-disaster recovery operations (Geller, 2017; Vinodkumar & Bhasi, 2010).

Conceptually, CSMS encompasses processes for contractor selection, evaluation, coaching, and supervision of safety performance. It integrates K3 policy, hazard identification and risk assessment, operational controls, worker competency, and periodic safety evaluations. However, the effectiveness of CSMS is not realized in a vacuum; it is profoundly influenced by mediating factors such as worker safety behavior, organizational safety culture, the availability of adequate work equipment, and the quality of field supervision. Post-disaster work readiness is thus a multidimensional construct, encompassing not only technical preparedness but also mental readiness, procedural compliance, and the adaptive capacity to manage dynamic risks (Neal & Griffin, 2019). This highlights the need for a comprehensive empirical model to understand these interrelationships.

Although various studies have discussed the role of CSMS and K3 management in occupational safety performance, research that specifically addresses the post-disaster work context remains relatively limited. Most existing studies focus on normal working conditions or large-scale construction projects without considering post-disaster risk dynamics. In addition, few studies examine the mediating roles of variables such as safety behavior, K3 culture, and risk management in explaining the relationship between CSMS and vendor work readiness. The novelty of this research lies in integrating the safety management system approach within the post-disaster context and empirically testing the direct and indirect influence of CSMS on Yantek vendors' work readiness through relevant K3 supporting variables. This approach is expected to provide a new perspective in developing safety-based work readiness models.

The urgency of this research is further strengthened by the increasing frequency of natural disasters in Indonesia, which directly affect electricity infrastructure. The need for fast and safe restoration of electrical services demands vendor readiness that is not only technically competent but also mature in the implementation of work safety principles. Without an

adequate understanding of the factors influencing post-disaster work readiness, efforts to improve safety and work effectiveness may not be well-targeted. Therefore, this research serves as a basis for formulating policies and strategies to enhance CSMS implementation, making it more adaptive to post-disaster conditions.

This study aims to analyze the influence of the Contractor Safety Management System on the readiness of Yantek vendors to carry out their work after a disaster. Specifically, it seeks to examine the direct influence of CSMS on job readiness and to analyze the mediating roles of safety behavior, K3 culture, risk management, and supervisory systems in these relationships. Using a quantitative approach and Partial Least Squares–Structural Equation Modeling (PLS-SEM) analysis, this study is expected to provide a comprehensive empirical understanding of the relationships among the studied variables.

The findings of this research are anticipated to contribute both theoretically and practically. Theoretically, this study enriches the literature on occupational safety management by presenting an integrated, CSMS-based post-disaster work readiness model. Practically, the results can serve as a reference for Yantek's parent company and vendors in formulating occupational safety policies, enhancing the effectiveness of CSMS implementation, and strengthening work readiness in post-disaster conditions. In addition, the study can serve as a reference for future researchers interested in occupational safety and risk management in high-risk working environments.

RESEARCH METHODS

This study is designed as quantitative research with an explanatory approach, aiming to explain the causal relationship between variables in the context of Yantek vendors' work readiness after a disaster (Sugiyono, 2019). This approach was chosen to obtain a measurable empirical understanding of how the Contractor Safety Management System (CSMS) contributes to shaping work readiness through an integrated work safety system mechanism. The research was conducted within the work environment of Yantek vendors directly involved in post-disaster electrical engineering recovery and service activities, taking into account the characteristics of high-risk work, operational pressures, and dynamic field safety conditions. The research period was adjusted to the post-disaster phase relevant to the study object, ensuring that the collected data represented the actual state of work readiness under abnormal conditions. The research focus encompasses several main aspects: the implementation of CSMS, occupational safety behavior, K3 culture, work risk management, supervisory systems, and vendor work readiness in performing tasks safely and effectively. The formulation of this research design is directed toward integrating systemic, behavioral, and environmental aspects to develop comprehensive solutions for safety and work readiness challenges following disasters.

The population of this study includes all parties involved in implementing and supervising Yantek vendors' work after the disaster, including vendor management, field workers, work supervisors, K3L personnel, and CSMS auditors. Sample determination considered the direct involvement of respondents in CSMS execution and post-disaster work implementation to ensure high relevance to the research objectives. The total number of respondents was determined based on the analytical needs for evaluating relationships among latent variables, while maintaining representativeness and data adequacy. Data collection was

conducted through the dissemination of structured questionnaires designed to capture respondents' perceptions, experiences, and assessments regarding CSMS implementation and work readiness. The instruments were developed based on indicators representing each research variable as formulated in the conceptual framework and tailored to the post-disaster work context (Hinze et al., 2013). The data collection process was carried out systematically, ensuring consistency in respondents' understanding of each statement so that the resulting data accurately described actual conditions of work safety implementation and readiness.

The collected data were analyzed using a structural modeling approach to examine the direct and indirect relationships among the research variables. This analytical strategy aimed to evaluate the extent to which CSMS influences vendor work readiness, both directly and through mediating variables such as safety behavior, K3 culture, risk management, and supervisory systems. The analysis was conducted in stages to ensure that each research construct exhibited internal consistency and sufficient validity before testing structural relationships. This analytical framework enabled the identification of dominant patterns of influence and key factors that either strengthen or weaken post-disaster work readiness. Through this approach, the research methodology serves not only as a hypothesis-testing tool but also as a problem-solving instrument capable of generating practical recommendations grounded in empirical evidence. The analysis results are expected to provide a strong foundation for policy development and for improving CSMS implementation in a more adaptive and contextual manner to address high-risk post-disaster working conditions.

RESULTS AND DISCUSSION

This research was carried out on Yantek vendors who are directly involved in the implementation of electrical engineering service work in post-disaster conditions. The scope of work that is the object of the research reflects activities with a high level of risk, especially work on active power grids, restoration of infrastructure affected by disasters, and field work with unstable environmental conditions. These conditions make the implementation of safety and work readiness a crucial aspect in the successful implementation of work.

The number of respondents involved in this study was 88 people, consisting of vendor management, field workers, work supervisors, K3L personnel, and CSMS auditors. Respondents were selected based on their direct involvement in the implementation of the Contractor Safety Management System (CSMS) and the implementation of post-disaster work. The composition of respondents shows the dominance of field workers, who represent the parties most often exposed to occupational risks, so that the data obtained reflect the factual conditions of the implementation of occupational safety in the field.

Table 1. Respondent Characteristics

Respondent Group	Number of Respondents
Yantek Vendor Management	10
Yantek Vendor Worker	53
Job Supervisor (User)	15
K3L PLN UP3 FBT Section	5
Auditor CSMS UIW NTT	5
Total	88

Source: Primary Data Processed (2025)

The main variables studied in this study include Contractor Safety Management System (CSMS) as an independent variable and the readiness to implement vendor work as a dependent variable. CSMS is measured through indicators of occupational safety policies, risk control, worker competence, and safety supervision systems. Meanwhile, work readiness reflects technical, procedural, human resource readiness, and readiness for safe work behavior in post-disaster conditions.

In addition to these two main variables, this study also involves supporting and mediation variables, namely safety behavior, K3 culture, risk management, supervision system, and availability of work equipment. These variables are used to provide a more comprehensive picture of the factors that affect the work readiness of a post-disaster vendor. The results of descriptive statistics show that in general, respondents gave a positive assessment of the implementation of CSMS and work readiness, although there are still variations in certain indicators.

Table 2. Descriptive Statistics

Variable	*Item*	Statement	*Mean*	*Min*	*Max*	*Standard Deviation*
CSMS	CSMS.1	Occupational safety policies and procedures have been clearly established and documented.	4.500	3.000	6.000	0.929
	CSMS.2	All workers have participated in occupational safety training before the implementation of the work.	4.477	2.000	6.000	0.977
	CSMS.3	The safety performance of the vendor is evaluated periodically by the management.	4.477	2.000	6.000	0.965
	CSMS.4	Safety audits and inspections are carried out regularly as scheduled.	4.295	2.000	6.000	0.955
K3 Culture	BK3.1	There is a high awareness of work risks in the work environment.	4.432	2.000	6.000	0.975
	BK3.2	Occupational safety and health (K3) procedures are adhered to by all workers.	4.409	2.000	6.000	0.961
	BK3.3	Leaders show commitment and leadership in implementing work safety.	4.261	2.000	6.000	1.017
	BK3.4	Workers are actively involved in occupational safety activities and programs.	4.295	2.000	6.000	1.024
Work Equipment	PK.1	Personal protective equipment (PPE) is available completely and as needed.	4.261	2.000	6.000	1.028
	PK.2	The work tools used in the work are in complete condition and ready to use.	4.443	2.000	6.000	1.021
	PK.3	Maintenance and inspection of work equipment is carried out regularly.	4.523	2.000	6.000	0.929
	PK.4	Work equipment is easily accessible to the workforce when needed.	4.466	2.000	6.000	0.999

Variable	*Item*	Statement	*Mean*	*Min*	*Max*	*Standard Deviation*
Risk Management	PR.1	Occupational risks have been clearly identified before work begins.	4.659	3.000	6.000	0.878
	PR.2	Mitigation measures against occupational risks have been planned and implemented.	4.659	3.000	6.000	0.878
	PR.3	Monitoring and evaluation of work risks is carried out periodically.	4.670	3.000	6.000	0.862
	PR.4	There is a quick response and clear procedures in dealing with work incidents.	4.443	3.000	6.000	0.915
Supervision Pattern	PP.1	Field supervision is carried out regularly during work activities.	4.432	3.000	6.000	0.927
	PP.2	Supervisors are actively involved in the work safety supervision process.	4.409	2.000	6.000	0.949
	PP.3	Standard operating procedures (SOPs) are adhered to during the execution of the work.	4.307	2.000	6.000	1.037
	PP.4	Corrective action is taken against the safety violations found.	4.330	3.000	6.000	0.997
Readiness for Work Implementation	KPP.1	Resources are available to support the implementation of work after natural disasters.	4.307	2.000	6.000	1.026
	KPP.2	There is the ability to handle post-disaster emergency situations.	4.591	2.000	6.000	0.912
	KPP.3	Post-disaster working conditions can be adapted quickly and effectively.	4.580	2.000	6.000	0.926
	KPP.4	Coordination with related parties is carried out well in the operational recovery process.	4.591	2.000	6.000	0.912
Safety Behavior	SB.1	Occupational safety rules are adhered to by all workers.	4.545	3.000	6.000	0.964
	SB.2	Potential hazards are actively reported to the relevant parties.	4.534	2.000	6.000	0.999
	SB.3	Workers participate in the safety training that is organized.	4.557	2.000	6.000	0.964
	SB.4	Personal protective equipment (PPE) is used consistently during work.	4.534	2.000	6.000	0.999

Source: Data Processing with SmartPLS (2025)

The results of the measurement model test showed that all indicators in this study met the validity and reliability criteria as set out in the analysis method used. The indicators in the CSMS variables, safety behavior, K3 culture, risk management, and work readiness have loading factor values that meet the minimum limit, so that they are able to represent the measured construct.

The reliability test showed that all variables had a good level of internal consistency. With the fulfillment of the criteria of validity and reliability, the measurement model is declared feasible to be used for the analysis of intervariable relationships. These results indicate that the research instruments used have been able to consistently describe the conditions of CSMS implementation and vendor work readiness.

Table 3. AVE dan *Communality*

Variabel	*Cut-off Value*	AVE	*Communality*
CSMS	0,500	0,878	0,937
K3 Culture		0,799	0,894
Work Equipment		0,784	0,885
Risk Management		0,887	0,942
Supervision Pattern		0,669	0,818
Readiness for Work Implementation		0,878	0,937
Safety Behavior		0,986	0,993

Source: Data Processing with SmartPLS (2025)

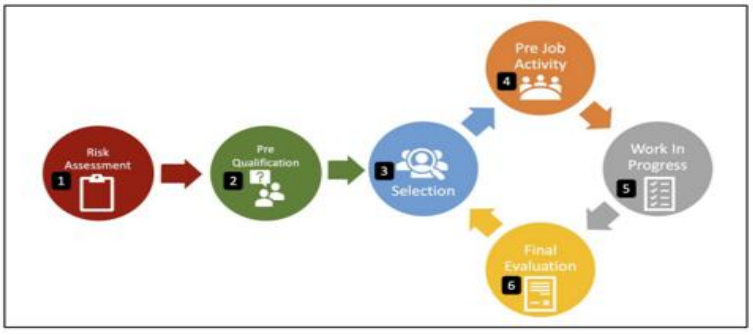
The results of the analysis show that the Contractor Safety Management System has a positive and significant effect on the readiness to carry out Yantek vendor work after the disaster. These findings show that the better the implementation of CSMS, the higher the level of vendor work readiness in carrying out work in post-disaster conditions.

This influence reflects the role of CSMS as a safety management system that is able to increase the technical and non-technical readiness of workers. The implementation of safety policies, safe work procedures, and structured supervision make a real contribution to shaping the work readiness of vendors.

The results of the study show that safety behavior has a positive and significant effect on the work readiness of vendors. Occupational safety behaviors reflected in compliance with procedures and the use of personal protective equipment contribute directly to the readiness to carry out post-disaster work.

In addition, safety behavior has been proven to mediate the influence of CSMS on job readiness. These findings suggest that the implementation of good CSMS will be more effective in improving work readiness when followed by consistent safety behaviors in the field.

Figure 1. CSMS FLOW PT PLN (Persero)



Source: SPLN U1.006:2021

The results of the analysis showed that K3 culture and work risk management have a significant influence on the work readiness of vendors after the disaster. A strong K3 culture, characterized by a commitment to good management and safety communication, supports the creation of a safe work environment and is ready to face post-disaster conditions.

Work risk management carried out through hazard identification and risk control before and during the implementation of work also increases vendor work readiness. The results of the study also show that the supervision system and the availability of work equipment

contribute to the work readiness of vendors. Consistent supervision ensures that safety procedures are implemented as per the provisions, while the availability of suitable work equipment supports the safe execution of work.

Although it is generally considered positive, the results of the study show that there is still variation in respondents' perception of the consistency of supervision in the field. These findings indicate that there is room for improvement in the implementation of occupational safety supervision.

Figure 1. CSMS Deployment Process Flow

Source: Siwidati (2023)

Overall, the results of the study show that the Contractor Safety Management System has a significant effect on the readiness to implement Yantek vendors' work after the disaster. This influence is strengthened by the role of safety behavior, K3 culture, risk management, supervision system, and the availability of work equipment. All of these findings are consistent with the results of data processing and analysis presented in the thesis. The results of this study present a factual picture of the implementation of CSMS and the work readiness of vendors without theoretical interpretation, so that it becomes a strong basis for discussion in the next section.

DISCUSSION

The Influence of CSMS on Work Implementation Readiness

The results of the analysis showed that CSMS had a positive and significant effect on work implementation readiness ($t = 1.991$; $p = 0.047$). This means that the better the implementation of CSMS, the more prepared Yantek vendors are to carry out post-disaster work. These findings are in line with Arita'Afianiyah et al. (2017), which states that the implementation of CSMS has a real effect on improving contractor safety performance. The study by Aqila and Rifai (2024) also shows that the implementation of CSMS during the execution phase plays an important role in minimizing operational risks in the field. In the context of the PT PLN industry, Mahdang and Arsad (2023) emphasized that the implementation of CSMS increases compliance, work readiness, and engineering officers' safety.

In particular, the need for post-disaster preparedness is increasingly relevant to Indonesia's disaster-prone conditions (BNPB, 2024). Yantek vendors operating amid electrical

infrastructure damage require a structured safety management system to ensure recovery processes run quickly and safely. Thus, the findings of this study confirm that CSMS is not merely a procedural document but a strategic instrument to ensure operational readiness during critical conditions.

Safety behavior had a significant effect on work readiness (t = 2.927; p = 0.003). Workers who demonstrate strong safety behavior are better prepared to operate in high-risk, post-disaster situations. Yani (2024) explains that worker safety behavior is influenced by the effectiveness of training and management support, which ultimately impacts compliance levels and operational readiness. Furthermore, Deta et al. (2023) found that organizational culture within PLN influences employee behavior and performance, aligning with the concept of safety behavior as an internal worker factor. In addition, the study by Abdilah et al. (2023) on Yantek Optimization shows that improvements in service and operational quality are largely determined by disciplined and responsive work behavior. This supports the finding that safety behavior is an important factor in Yantek vendor readiness after a disaster.

The analysis results indicated that the indirect effect of CSMS on work readiness was significant (t = 4.085; p = 0.000). This means that when K3 culture, work equipment, risk management, and supervisory patterns are properly managed, the effectiveness of CSMS in enhancing work readiness becomes stronger. Tualeka et al. (2023) proved that CSMS implementation enhances a company's safety culture. Rosmariani et al. (2022) showed that a well-structured CSMS increases the effectiveness of safety controls in construction projects. Meanwhile, Santoso et al. (2017) emphasized that high-risk work requires strict equipment standards, procedures, and supervision as integral components of the CSMS framework.

CSMS had a very significant influence on K3 culture (t = 5.295; p = 0.000). CSMS establishes standards, guidelines, and mechanisms that strengthen the safety culture. This is further supported by the study of Wardhani and Duwi (2022), which states that CSMS is a fundamental requirement for partners to develop a consistent safety culture. Research by Suery et al. (2016) also shows that CSMS at the work preparation stage improves safety discipline and worker awareness.

K3 culture significantly affected job readiness (t = 2.435). A strong safety culture encourages workers to be more disciplined, responsive, and capable of handling hazardous conditions. Lukiatsinto and Widajati (2014) found that CSMS and safety culture are directly related to the prevention of work accidents. Natalia et al. (2022), in their study at PLN UP3 Tolitoli, also demonstrated that a strong SMK3 fosters readiness to perform electrical work in areas prone to disruptions.

The statistical results also showed that CSMS had a significant effect on work equipment (t = 7.040). CSMS underscores the importance of appropriate, well-maintained, and compliant tools. The research of Joanly et al. (2023) emphasized that one of the critical indicators of CSMS is the adequacy of safety facilities and equipment, which significantly impacts project safety. Similarly, Rawis et al. (2016) highlighted that K3 equipment planning is an important component of operational readiness.

The effect of work equipment on work implementation readiness, however, was not significant (t = 1.105; p = 0.269). This implies that the mere availability of equipment is insufficient to determine post-disaster work readiness. This aligns with Ratriwardhani et al. (2024), who confirmed that, although equipment is essential, project readiness is more strongly

influenced by coordination, safety culture, and effective supervision. Farida et al. (2024) also noted that, in many infrastructure projects, meeting K3 standards alone is inadequate; readiness requires capable human resources and efficient work processes.

CSMS had a highly significant effect on risk management (t = 6.964). CSMS provides mechanisms for hazard identification, risk assessment, and risk control. Sari (2017) found that CSMS effectively helps identify hazards in civil projects. Pratiwi (2017) emphasized that CSMS requires a systematic risk assessment process, which directly affects the quality of contractors' work.

However, risk management itself had no significant effect on implementation readiness (t = 0.505). This finding is consistent with Rizki et al. (2024), which indicated a gap in the implementation of CSMS and risk management during the pre-qualification stage. Similarly, Madhona and Lala (2021) stated that although risk management is implemented, it is often not the primary determinant of operational readiness because field conditions tend to be more dominant.

The results further showed that CSMS had a significant effect on supervision patterns (t = 12.159). Supervision is a fundamental component of CSMS. Kamdhari and Estralita (2018) confirmed that SMK3/CSMS enhances the intensity of supervision in construction projects. Ratriwardhani et al. (2024) also stated that effective supervision determines the success of CSMS implementation among subcontractors.

Supervision patterns had a significant effect on the readiness of Yantek vendors to implement work after a disaster (t = 3.290; p = 0.001). This indicates that structured supervision—from safety briefings and compliance monitoring of K3 aspects to post-work evaluations—is a key factor in ensuring vendors are ready to work safely and effectively in post-disaster conditions. Consistent with this, Ratriwardhani et al. (2024) emphasized that supervision quality is a key determinant of successful CSMS implementation among subcontractors, particularly in ensuring procedural compliance and consistent field execution..

Research Implications

Based on the results of the research conducted, the implications of this finding can be described into 3 (three) main aspects, namely theoretical, practical, and policy.

a. Implicasi's theorem

This research makes an important theoretical contribution to the development of K3 science and risk management, especially in the context of disaster management. Through an in-depth analysis, this study revealed that CSMS not only plays a role as a routine safety control mechanism, but also serves as a major determining factor in operational readiness after a crisis or disaster.

The findings of the study show that CSMS contributes directly to improving post-disaster work readiness through several key pathways. First, CSMS builds and strengthens a culture of OSH in the work environment, which creates a collective awareness of the importance of safety and vigilance in emergency situations. Second, these systems improve the effectiveness of risk management by proactively identifying, assessing, and controlling hazards before and during crisis situations. Third, CSMS ensures the availability and readiness of adequate and compliant safety equipment, which is key in minimizing the impact of disasters on labor and facilities. Fourth, the CSMS improves continuous surveillance and *monitoring* ,

thereby ensuring that safety procedures are followed consistently even under non-normal conditions.

In addition, this study expands the scope of understanding of the role of human behavior mediation and management systems in the context of post-disaster electricity operations, which has received less attention in the academic literature. Thus, this study provides a new perspective that the implementation of CSMS is not only relevant under normal conditions, but also essential in the face of uncertainty and the dynamics of post-disaster situations, where operational risks and challenges increase significantly.

Overall, these results strengthen the theoretical framework that links safety management systems to operational readiness, through the mediation of K3 culture, risk management, equipment, and supervision, thus providing a solid scientific basis for the development of adaptive and responsive safety management policies and practices in the electricity sector and other disaster-prone sectors.

b. Practical Implications

In practical terms, the results of this study confirm that vendors such as Yantek need to optimize the integration and implementation of CSMS in a comprehensive and sustainable manner to ensure work readiness, especially in the face of post-disaster situations full of uncertainty. The effective implementation of CSMS is not just about meeting administrative requirements, but it must be part of a real and operational work culture in the field.

Some of the key practices that need to be adopted include ongoing and tiered safety training, which aims to increase the competence and awareness of the entire workforce to the risks that may occur. In addition, routine internal audits need to be carried out systematically to evaluate the effectiveness of the implementation of the CSMS and identify potential gaps or necessary improvements. The provision of adequate and compliant safety equipment is another important element, accompanied by the development of a responsive and transparent risk reporting system so that any threat or incident can be handled appropriately immediately.

In addition to the system and procedure aspects, individual safety behavior is also a crucial factor that must be strengthened. Therefore, efforts to establish a strong K3 culture must be carried out through a participatory approach, involving all workers in the decision-making process related to occupational safety and health. This active involvement will increase the sense of responsibility and ownership for safety, so that the practice of K3 becomes an integral part of daily work.

Thus, the implementation of CSMS, which is not just an administrative formality, but is carried out seriously and consistently, will have a real impact in maintaining operational continuity and labor safety, especially in critical post-disaster times.

c. Policy Implications

From a policy perspective, the results of this research provide an important foundation for PT. PLN (Persero) and related regulatory agencies to improve and tighten CSMS implementation standards, especially in the context of disaster management. Comprehensive and integrated policies are needed so that CSMS does not only function as an administrative obligation, but also becomes a strategic instrument to improve operational resilience and preparedness.

One of the suggested policy steps is the implementation of periodic post-disaster preparedness audit obligations as an integral part of the procurement process of goods and

services as well as partnerships with vendors. This audit aims to ensure that all parties involved are truly prepared to face disaster risks and can immediately take the necessary actions without disrupting the smooth running of operations.

In addition, regulations need to be directed to encourage the development and implementation of real-time digital-based safety reporting systems. This system allows for direct and responsive monitoring of field conditions to any incidents or potential hazards, so that decision-making can be made quickly and on target. Strengthening the role of field supervisors is also an important aspect, by providing adequate authority and resources so that supervision can run effectively and accountably.

Furthermore, the policy should regulate periodic certification and training mechanisms for vendor workers related to disaster preparedness. This certification not only enhances individual competencies, but also ensures that all personnel involved have a standard of ability that is appropriate to operational needs in crisis conditions.

With policies that strengthen these aspects, CSMS will develop into not just a tool for regulatory compliance, but also a strategic instrument in building resilient national operational resilience against various disaster threats, especially in the electricity sector.

CONCLUSION

This study aims to analyze the effect of the implementation of the Contractor Safety Management System (CSMS) on the work readiness of Yantek vendors in post-disaster conditions. The research focuses on understanding how occupational safety management systems—supported by safety behavior, K3 culture, risk management, supervision, and the availability of work equipment—contribute to fostering safe and effective work readiness in high-risk work situations. The results indicate that the implementation of CSMS plays a significant role in enhancing vendor readiness after disasters. The main findings confirm that job readiness is determined not only by technical aspects but also by the integration of structured safety systems and consistent occupational safety behavior.

Furthermore, the variables of safety behavior, K3 culture, risk management, supervisory systems, and work equipment availability have been proven to strengthen the relationship between CSMS and work readiness, thereby creating a more comprehensive level of operational preparedness. These findings demonstrate that the successful implementation of post-disaster work is highly dependent on the synergy between safety policies, field practices, and organizational commitment to occupational safety.

Theoretically, this study contributes to the development of occupational safety management research by expanding the understanding of CSMS's role in post-disaster work contexts, an area that remains relatively underexplored in the literature. Practically, the results provide an empirical basis for Yantek companies and vendors to strengthen CSMS implementation as a strategic effort to improve work readiness and control post-disaster risks. This research is limited by its focus on Yantek vendors and specific post-disaster contexts; therefore, generalizing the findings should be done cautiously. Future studies are recommended to explore other industrial contexts using a longitudinal approach and to include external variables such as safety leadership and environmental factors to enrich the understanding of safety-based work readiness.

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