

The Risk Safety Management Practices in Preventing the Construction Site Accident in the Department of Public Works and Highways (DPWH), Province of Albay

Hannibal Joel B. Bañares¹

¹School of Graduate Studies, University of Northeastern Philippines

ARTICLE INFORMATION	ABSTRACT
Article history: Published: October 2026 Keywords: Construction Safety Risk Management Personal Protective Equipment Kendall Concordance DPWH Albay	The study examined risk and safety management practices and practices intended to prevent construction-site accidents in Department of Public Works and Highways (DPWH) projects in Albay. Quantitative assessments were summarized through weighted means, while Kendall's coefficient of concordance and reported chi-square tests assessed agreement on indicator rankings among district engineering offices. Participant counts, sampling procedures, and detailed instrument specifications were not reported. The six risk-management dimensions had an overall weighted mean of 4.36, interpreted as Much Implemented. Hazard identification and risk assessment had the highest domain mean (4.63), while safety policies and procedures had the lowest (4.19). The five accident-prevention dimensions had an overall mean of 4.34, interpreted as Much Evident, with training highest (4.35) and safety equipment lowest (4.32). Significant agreement was reported for PPE and safety policies; other implementation dimensions were reported as nonsignificant. Prevention-domain concordance ranged from 0.26 to 0.57 in the initial numerical findings, with a different training coefficient elsewhere. Findings identify priorities in policy review, training evaluation, resource continuity, and accountability for corrective action. The ratings describe perceived implementation and do not demonstrate reduced accident incidence. Unresolved numerical versions and incomplete methodological reporting limit inferential interpretation. The study supports coordinated safety governance and monitoring while requiring verification before conclusions about safety outcomes can be made.

1. Introduction

Construction safety requires attention to hazards, work organization, equipment, competence, supervision, and emergency response. An assessment of these practices can help identify how protection is perceived within public infrastructure operations. However, implementation ratings and accident outcomes answer different questions. A statement that a practice is frequently or strongly implemented does not establish how many accidents it prevented, particularly when exposure, incident histories, and comparisons over time have not been measured.

The study examined DPWH construction projects in the Province of Albay through two sets of dimensions. The first addressed hazard identification and risk assessment, policies and procedures, PPE, training and orientation, supervision and monitoring, and emergency preparedness. The second addressed fall protection, equipment safety, training, safety culture, and supervision and coordination. The overlap between these sets makes it useful to examine both the general management arrangements and the specific activities described as supporting accident prevention.

Research provides reasons to interpret this profile as a system rather than a collection of isolated requirements. Haslam et al. (2005) combined focus-group work with investigations of construction accidents and examined interacting influences involving workers, workplaces, equipment, materials, and risk management. Their accident-based approach differs from the study's ratings. It supports asking how practices connect, while providing no basis for transferring causal explanations or accident frequencies to the participating DPWH offices.

A Philippine public-sector perspective is provided by Cuya-Antonio and Gabriel (2021), who examined OSH practices at Nueva Ecija University of Science and Technology. Their findings included concerns about protective equipment and differences in perceptions among employee groups. That institution is not a construction project, so its results cannot be treated as a direct benchmark for Albay. It nevertheless shows why a favorable general perception should be interpreted alongside the particular resources and practices being rated.

The International Labour Organization (ILO, 2022) presents construction safety through a comprehensive code of practice that emphasizes preventive management and cooperation among employers, workers, and their representatives. This offers a normative context for considering how responsibilities are distributed across a project. It is guidance, rather than evidence that any participating office complied with a specific requirement or achieved a particular outcome.

The study addressed the level of implementation of the six risk-management dimensions; agreement on their rank orders; the level of implementation of five accident-prevention dimensions; agreement on those rankings; and policy recommendations. This distinction between extent and agreement is central. Offices can assign favorable ratings while ordering indicators differently, and similar rankings can occur at different rating levels. Neither result alone establishes accident prevention.

2. Methods

2.1 Analytical approach and setting

The study presented quantitative assessments of risk and safety management practices and practices intended to prevent construction-site accidents. Weighted means described the listed domains and indicators; rank-agreement analyses used coefficients of concordance and chi-square statistics. The formal research-design designation was not reported. No experimental assignment, control condition, repeated measurement, or participant-level predictive analysis was described. These features are not inferred from the title or from references to implementation.

The study involved respondents from three District Engineering Offices. The office names, participant roles, respondent counts, and allocation among offices were not reported. The three offices are grouping units mentioned in the findings and are not a reported sample of three individual respondents.

2.2 Measurement and procedures

The findings contain six implementation domains and five prevention domains, each with ten listed indicators. The identity and development of the measurement instrument, response anchors, interpretation intervals, validation, pilot testing, and reliability coefficients were not reported. MI and VMI mean Much Implemented and Very Much Implemented; ME and VME mean Much Evident and Very Much Evident. These labels are retained without inferring cutoffs from the observed values.

Sampling procedures, recruitment, response rates, administration mode, dates of collection, missing-data treatment, and the calculation of weighted means were not specified. The statistical term weighted mean is retained, but the weighting formula and aggregation across groups are not reconstructed. Counts of listed indicators describe the reported findings and do not establish the number or composition of participants.

Ethics approval, individual consent, confidentiality safeguards, and data-retention arrangements were not documented. No approval number or consent procedure is supplied by assumption. The study is presented through aggregate findings without adding personal participant information. Administrative or institutional affiliation is not treated as evidence of independent ethics review.

2.3 Statistical treatment and reporting

The concordance analyses assessed agreement on indicator rank orders among district groups. The study used Kendall's coefficient of concordance (W) and reported chi-square tests. W describes consistency of ordering, while a weighted mean describes the level of a rating. Neither statistic estimates a causal effect or a correlation between the two sets of study domains.

Reported probability inequalities and hypothesis decisions are retained as stated. A threshold such as $p > 0.05$ is not an exact p value. Acceptance of the null hypothesis is reported as the stated decision, while interpretation is limited to failure to establish significant agreement. The full ranking matrices, degrees of freedom, treatment of ties, software, and unrounded calculations were not reported, so the tests could not be independently reproduced.

Tables reconstruct the numerical findings stated in the results narrative. Detailed district values, numeric ranks, response frequencies, and standard deviations are not supplied where unreported. Indicator wording and displayed numerical precision are retained. Em dashes mark an unreported value or interpretation, never zero. Multiple numerical versions are displayed together when they differ; no corrected value has been substituted.

3. Results

The tables distinguish domain profiles, overall summaries, and agreement statistics. Indicator interpretations appear only when explicitly assigned in the numerical findings. Domain labels are not automatically applied to every item, and no missing interpretation is inferred from a presumed scale cutoff. Analytical discussion follows each table.

3.1 Hazard identification and risk assessment

Table 1. Hazard identification and risk assessment

Indicator	Weighted mean	Reported interpretation
Workers are informed about potential hazards present in construction project sites	4.73	VMI
Potential risks are analyzed carefully before executing construction-related work activities	4.68	VMI
Safety inspections are conducted regularly to identify possible workplace hazards	4.68	VMI
Risk assessments are conducted for all tasks before project implementation begins	4.67	VMI
Supervisors ensure hazard identification procedures are followed by all workers	4.64	VMI
Workers participate actively in hazard identification and risk assessment processes	4.61	VMI
Documentation of hazards and risks is properly maintained and updated regularly	4.61	VMI
Risk control measures are implemented immediately after identifying workplace hazards	4.60	VMI
Hazard reporting systems are established and utilized by workers consistently	4.58	VMI
Hazards are identified regularly before starting any construction work activities	4.51	VMI

RESEARCH ARTICLE

Indicator	Weighted mean	Reported interpretation
Overall weighted mean	4.63	VMI

Note. — means no separate item value or interpretation was specified. Overall interpretation is retained as reported.

The hazard profile places communication and advance risk analysis above routine pre-work identification and reporting. This is a meaningful operational distinction: informing workers about a hazard is different from ensuring that changing conditions are recognized at the beginning of each task. The favorable overall classification describes respondents' assessment of the system, but does not demonstrate that every shift or work activity received a documented assessment.

A practical response is to connect the pre-work check, worker reports, assigned corrective action, and confirmation that the hazard was controlled. The study supports reviewing that sequence because its components received different ratings. It does not establish why the differences occurred. Work pressure, reporting reluctance, and resource limitations remain possible explanations for investigation rather than demonstrated causes.

3.2 Safety policies and procedures

Table 2. Safety policies and procedures

Indicator	Weighted mean	Reported interpretation
Workers are aware of safety policies and understand their responsibilities fully	4.34	MI
Clear safety policies are implemented and communicated to all workers effectively	4.28	MI
Management enforces strict compliance with safety rules and regulations consistently	4.28	MI
Safety procedures are strictly followed by workers during construction site operations	4.24	MI
Workers are encouraged to follow safety procedures at all times	4.18	MI
Safety policies align with national standards and regulations for construction projects	4.15	MI
Supervisors monitor adherence to safety procedures during daily work operations	4.13	MI
Safety guidelines are visibly posted in all areas within construction sites	4.12	MI
Violations of safety policies result in appropriate disciplinary actions being implemented	4.10	MI
Safety procedures are regularly reviewed and updated to ensure effectiveness	4.05	MI
Overall weighted mean	4.19	MI

Note. — means no separate item value or interpretation was specified. Overall interpretation is retained as reported.

Awareness of responsibilities and communication of rules were rated more favorably than updating procedures, disciplinary follow-through, and visible guidelines. The pattern suggests a perceived distinction between knowing a policy and sustaining the mechanisms that keep it current and usable. It does not prove that sanctions were absent, that a particular rule was violated, or that a site was legally compliant.

The relatively lower review item supports examining how procedures are revised after changes in tasks, equipment, or site conditions. Policy communication should be checked against access to current instructions and fair follow-through on identified problems. Cuya-Antonio and Gabriel (2021) similarly identified the relevance of clearer OSH policy guidance in a Philippine public institution, although their university setting differs from construction projects.

3.3 Availability and use of personal protective equipment

Table 3. Availability and use of personal protective equipment

Indicator	Weighted mean	Reported interpretation
Workers consistently wear appropriate personal protective equipment during work activities	4.68	VMI
Personal protective equipment is available for all workers at construction sites	4.63	VMI
Supervisors enforce proper use of personal protective equipment among workers	4.49	MI
Workers are trained on proper usage of personal protective equipment	4.33	MI
Workers understand the importance of wearing personal protective equipment consistently	4.31	MI
Personal protective equipment is regularly inspected to ensure good working condition	4.29	MI

RESEARCH ARTICLE

Indicator	Weighted mean	Reported interpretation
Adequate supply of personal protective equipment is maintained at construction sites	4.25	MI
Damaged personal protective equipment is immediately replaced when identified by supervisors	4.21	MI
Personal protective equipment is suitable for specific construction tasks and hazards	4.07	MI
Non-compliance with PPE usage is addressed immediately by safety officers	3.90	MI
Overall weighted mean	4.32	MI

Note. — means no separate item value or interpretation was specified. Overall interpretation is retained as reported.

PPE use and availability received the strongest ratings, while immediate responses to non-compliance and suitability for particular hazards received lower ratings. Provision, correct selection, actual use, and replacement are separate parts of protection. The study therefore identifies a perceived gap within an otherwise favorable PPE profile rather than evidence that equipment provision alone has resolved exposure to hazards. The results support a task-based review of equipment selection and a clear process for replacing defective items and addressing unsafe use. Accountability should include the adequacy of supply and instructions as well as worker conduct. The study did not inspect individual equipment, record exposure, or compare injury rates, so the ratings cannot quantify the protective effect of PPE or establish its sufficiency for any specific task.

3.4 Safety training and orientation

Table 4. Safety training and orientation

Indicator	Weighted mean	Reported interpretation
Workers receive safety orientation before deployment to construction project sites	4.55	VMI
Regular safety training programs are conducted for all construction workers	4.46	MI
Workers understand safety procedures after attending training and orientation sessions	4.42	MI
Refresher training programs are conducted to reinforce safety awareness among workers	4.35	MI
Toolbox meetings are conducted regularly to discuss daily safety concerns	4.34	MI
Training programs address specific hazards present in construction work environments	4.34	MI
New workers undergo comprehensive safety orientation before starting assigned tasks	4.31	MI
Safety training materials are clear, relevant, and easy to understand	4.29	MI
Supervisors ensure workers attend mandatory safety training sessions regularly	3.99	MI
Training effectiveness is evaluated to improve safety practices continuously on-site	3.95	MI
Overall weighted mean	4.30	MI

Note. — means no separate item value or interpretation was specified. Overall interpretation is retained as reported.

Initial orientation was rated more favorably than attendance enforcement and evaluation of training effectiveness. This distinguishes access to introductory information from continued participation and evidence that learning transfers to work. A training program may be visible and frequently offered without its competence outcomes being consistently evaluated; the ratings identify that question but do not answer it through direct testing.

The policy implication is to link attendance records with practical demonstrations and follow-up observation of relevant tasks. These would provide evidence beyond the occurrence of a training session. The study does not establish that workers lacked knowledge or that training failed. It identifies evaluation as a relatively lower-rated practice and supports reviewing how the organization judges whether its training objectives have been met.

3.5 Site supervision and monitoring

Table 5. Site supervision and monitoring

Indicator	Weighted mean	Reported interpretation
Supervisors actively monitor safety practices during construction activities on site	4.48	VMI
Unsafe behaviors are immediately corrected by supervisors and safety personnel	4.44	MI
Regular site inspections are conducted to monitor safety compliance levels	4.43	MI
Safety officers are present during operations to ensure safety compliance	4.38	MI

RESEARCH ARTICLE

Indicator	Weighted mean	Reported interpretation
Supervisors ensure workers follow safety procedures during construction work activities	4.35	MI
Monitoring systems are in place to track safety performance consistently	4.35	MI
Supervisors provide immediate feedback regarding safety violations observed on-site	4.27	MI
Workers are guided by supervisors to maintain safe work practices	4.13	MI
Reports on safety monitoring are documented and reviewed by management regularly	4.13	MI
Safety compliance is evaluated regularly through inspections and monitoring activities	4.10	MI
Overall weighted mean	4.31	MI

Note. — means no separate item value or interpretation was specified. Overall interpretation is retained as reported.

Active supervisory observation, correction of unsafe behavior, and site inspection were rated above documented management review and recurring evaluation of compliance. The profile suggests that visible field oversight was more favorably perceived than some processes through which observations become organizational learning. It cannot establish the actual frequency or quality of inspections because inspection records and independent observations were not analyzed.

A useful response is to ensure that observations specify a responsible person, a required action, and evidence of completion. Repeated findings should inform subsequent work planning rather than remain isolated reports. This recommendation follows the pattern of ratings; it does not imply that a digital platform or a new checklist has already improved safety. Such changes would need their own implementation and outcome evaluation.

3.6 Emergency preparedness and response

Table 6. Emergency preparedness and response

Indicator	Weighted mean	Reported interpretation
Emergency response plans are established and implemented at construction project sites	4.54	VMI
First aid kits are available and maintained properly at construction sites	4.52	VMI
Emergency equipment is available and accessible during construction site operations	4.48	MI
Workers are trained in emergency response procedures for various situations	4.42	MI
Workers know evacuation routes and assembly points during emergency situations	4.41	MI
Safety officers coordinate emergency response activities during incidents effectively	4.36	MI
Communication systems are effective during emergencies in construction project sites	4.34	MI
Emergency drills are conducted regularly to prepare workers for incidents	4.33	MI
Incident response procedures are followed promptly during emergency situations on-site	4.25	MI
Emergency contacts are posted and accessible to all workers on-site	4.18	MI
Overall weighted mean	4.38	MI

Note. — means no separate item value or interpretation was specified. Overall interpretation is retained as reported.

Established response plans and first-aid provision were rated above contact accessibility and prompt adherence to incident-response procedures. The distinction matters because the existence of resources does not establish that workers can locate, communicate, and act under emergency conditions. The overall favorable rating should therefore be interpreted alongside the comparatively lower operational communication items.

Reviewing the visibility of contacts, evacuation information, and role assignments offers a practical starting point. Drills can then examine whether these arrangements are usable under site conditions. The ILO (2022) places cooperation and preventive management within a comprehensive construction safety approach. This provides a policy context for integrating preparedness with daily work, but does not validate the local ratings or demonstrate emergency-response effectiveness.

Table 7. Summary of risk and safety management implementation

Domain	Weighted mean	Label
Hazard identification and risk assessment	4.63	VMI

Domain	Weighted mean	Label
Safety policies and procedures	4.19	MI
Availability and use of personal protective equipment	4.32	MI
Safety training and orientation	4.30	MI
Site supervision and monitoring	4.31	MI
Emergency preparedness and response	4.38	MI
Overall weighted mean	4.36	MI

Note. Domain and overall means are reproduced as reported. Means have no physical units; interpretation codes are defined in Methods. The implementation profile is led by hazard identification and risk assessment, while policies and procedures are comparatively lower. This suggests that hazard-related activities were more favorably perceived than some formal systems for sustaining them. The overall Much Implemented classification should be read alongside the detail of each domain. Small differences among PPE, supervision, and training do not establish statistically different implementation levels. The study supplies no variability estimates or tests of these mean differences. Their practical interpretation depends on the content and importance of the lower-rated items, rather than a claim that one domain has a proven advantage.

Table 8. Reported agreement on implementation indicator rankings

Domain	Initial W / χ^2	Other W / χ^2	Reported p	Stated H ₀ decision
Hazard identification and risk assessment	0.46 / 12.42	0.46 / 12.38	p > 0.05	Accepted
Safety policies and procedures	0.70 / 18.9	0.70 / 18.92	p < 0.05	Rejected
Availability and use of PPE	0.85 / 22.95	0.846 / 22.85	p < 0.01	Rejected
Safety training and orientation	0.54 / 14.58	—	p > 0.05	Accepted
Site supervision and monitoring	0.25 / 6.75	0.25 / 6.76	p > 0.05	Accepted
Emergency preparedness and response	0.22 / 5.94	0.21 / 5.90	p > 0.05	Accepted

Note. Values separated by a slash are W and χ^2 . Different versions are shown where reported; — means not specified. Hypothesis wording is retained.

The implementation tests report significant rank agreement for PPE and safety policies, while the other four dimensions were described as nonsignificant. The strongest agreement was therefore not in the domain with the highest implementation mean. This illustrates the difference between the level of perceived practice and consistency in the ordering of its indicators.

The alternative numerical entries are retained because they cannot all be treated as equivalent rounding. The findings do not supply the full ranking matrices, degrees of freedom, or tie adjustments needed to verify the tests. A nonsignificant result does not establish absence of shared practice, and significant concordance does not demonstrate equal implementation levels or reduced accident risk.

3.7 Fall protection

Table 9. Fall protection

Indicator	Weighted mean	Reported interpretation
Workers are required to wear full-body harnesses when working at heights	4.56	—
Guardrails are installed in elevated work areas	4.47	—
Ladders and scaffolds are regularly inspected before use	4.44	—
Openings and floor edges are properly covered or barricaded	4.43	—
Workers strictly follow fall protection procedures during construction activities	4.35	—
Fall protection equipment is regularly maintained and replaced when necessary	4.35	—
Safety nets are provided where there is a risk of falling	4.33	—
Warning signs are posted in areas with fall hazards	4.27	—
Safety officers monitor compliance with fall protection requirements	4.13	—
Management provides adequate resources for fall protection measures	3.92	—
Overall weighted mean	4.33	ME

Note. — means no separate item value or interpretation was specified. Overall interpretation is retained as reported.

Harness requirements were rated above management resources and compliance monitoring. The profile separates a clearly stated protective requirement from the support needed to implement it. Equipment condition, suitable work arrangements, and supervisory action remain relevant even when a requirement receives a favorable rating. The study did not inspect elevated work areas or document falls, so the evidence concerns perceived practices.

The practical priority is to review whether fall-protection requirements are supported by appropriate resources and consistent inspection. A lower resource rating does not identify a monetary shortfall or prove an absence of equipment. Decisions should consider the hazards and work methods of each project rather than use a domain mean as a substitute for an assessment of the actual work environment.

3.8 Equipment safety

Table 10. Equipment safety

Indicator	Weighted mean	Reported interpretation
Personal Protective Equipment (PPE) is readily available to all workers	4.53	—
Workers consistently wear the required PPE while on site	4.46	—
Reflective vests are worn during construction operations	4.45	—
Safety shoes are provided and properly used by workers	4.44	—
Safety helmets are worn in designated construction areas	4.35	—
Protective gloves appropriate to the task are provided	4.34	—
Eye and face protection are available when required	4.32	—
Safety equipment is inspected regularly before use	4.28	—
Damaged or defective safety equipment is immediately replaced	4.12	—
Management ensures an adequate supply of safety equipment at all times	3.87	—
Overall weighted mean	4.32	ME

Note. — means no separate item value or interpretation was specified. Overall interpretation is retained as reported.

Ready availability of PPE was rated more favorably than continuity of supply and immediate replacement of defective equipment. This suggests that initial availability and sustained equipment management were not perceived identically. Replacement and inspection are important components of maintaining protection over a project's duration, but the study did not measure replacement times or inspect equipment condition.

The findings support reviewing responsibility for stock monitoring, defect reporting, and replacement authorization. An item that is lower in a favorable profile may still be operationally important if failure exposes workers to serious harm. Priority should therefore reflect the hazard and the adequacy of controls, as well as the relative mean. The study does not estimate the injury burden attributable to equipment supply.

3.9 Training

Table 11. Training

Indicator	Weighted mean	Reported interpretation
New employees receive safety orientation before starting work	4.53	—
Regular safety training programs are conducted for all personnel	4.46	—
Emergency response drills are conducted regularly	4.45	—
Workers are trained in the proper use of PPE	4.43	—
Safety training includes accident prevention strategies	4.36	—
Training materials are updated based on current safety standards	4.36	—
Supervisors receive specialized safety management training	4.35	—
Workers are trained on hazard identification and risk assessment	4.32	—
Workers are encouraged to participate actively in safety training sessions	4.17	—
The effectiveness of safety training programs is regularly evaluated	4.11	—
Overall weighted mean	4.35	ME

Note. — means no separate item value or interpretation was specified. Overall interpretation is retained as reported.

Orientation and recurring training were rated more strongly than active participation and evaluation of effectiveness. This echoes the earlier training profile and suggests that organizing sessions was more favorably perceived than verifying their outcomes. The

two sections use different item sets and interpretation language; their similar pattern should not be treated as independent confirmation of an effect.

Practical evaluation can distinguish attendance, understanding, demonstrated competence, and sustained safe practice. The study reports ratings of training arrangements, not assessed learning gains. A review of participation and evaluation procedures is therefore supported, while claims that training reduced accidents would require evidence linking exposure to training with appropriately measured outcomes.

3.10 Safety culture

Table 12. Safety culture

Indicator	Weighted mean	Reported interpretation
Management demonstrates a strong commitment to workplace safety	4.50	—
Employees actively participate in safety meetings and discussions	4.45	—
Workers are encouraged to report unsafe conditions without fear of punishment	4.44	—
Safety rules are consistently enforced across all project sites	4.40	—
Safety is considered a priority in all construction activities	4.39	—
Lessons learned from previous accidents are shared with workers	4.37	—
Safety achievements are recognized and rewarded by management	4.35	—
Workers encourage one another to follow safety procedures	4.34	—
Communication regarding safety issues is open and effective	4.23	—
Everyone on the construction site shares responsibility for maintaining safety	3.95	—
Overall weighted mean	4.34	ME

Note. — means no separate item value or interpretation was specified. Overall interpretation is retained as reported.

Management commitment and meeting participation were rated above shared responsibility and open communication. This suggests that visible organizational endorsement was perceived more strongly than safety responsibility distributed across everyone on site. The result does not establish that workers were unwilling to report concerns, nor does it identify an organizational mechanism causing the difference. A useful policy response is to examine whether worker reports receive feedback and whether responsibilities are understandable at each level. Recognition and enforcement should support reporting rather than discourage it. Haslam et al. (2005) examined interacting organizational and site influences in accident investigations, providing a systems perspective; the study's ratings cannot reproduce those accident-based causal findings.

3.11 Supervision and coordination

Table 13. Supervision and coordination

Indicator	Weighted mean	Reported interpretation
Supervisors regularly inspect construction activities for safety compliance	4.50	—
Communication among engineers, supervisors, and workers is effective	4.45	—
Safety officers coordinate closely with supervisors on safety concerns	4.45	—
Unsafe work practices are immediately corrected by supervisors	4.45	—
Safety inspections are documented and monitored regularly	4.39	—
Safety meetings are conducted before the start of work activities	4.38	—
Responsibilities for safety are clearly assigned to personnel	4.36	—
Construction activities are coordinated to minimize workplace hazards	4.36	—
Management promptly addresses safety concerns raised by workers	4.14	—
Supervisors ensure compliance with the Department of Labor and Employment (DOLE) Occupational Safety and Health (OSH) Standards and DPWH safety policies	3.93	—
Overall weighted mean	4.34	ME

Note. — means no separate item value or interpretation was specified. Overall interpretation is retained as reported.

Routine inspections and communication among technical personnel were rated above responsiveness to workers' concerns and explicit compliance with DOLE OSH standards and DPWH policies. The difference identifies a perceived weakness in translating coordination into follow-through. It does not constitute a regulatory audit or establish that a specific statutory requirement was breached.

Reviewing how concerns are escalated, assigned, and closed would connect coordination with accountable action. Responsibility should be clear to workers as well as managers, and unresolved concerns should remain visible during review. These findings justify examining the process, while the effectiveness of any proposed audit, reporting system, or coordination meeting remains to be evaluated.

Table 14. Summary of practices intended to prevent construction-site accidents

Domain	Weighted mean	Label
Fall protection	4.33	ME
Equipment safety	4.32	ME
Training	4.35	ME
Safety culture	4.34	ME
Supervision and coordination	4.34	ME
Overall weighted mean	4.34	ME

Note. Domain and overall means are reproduced as reported. Means have no physical units; interpretation codes are defined in Methods. The prevention means are closely grouped and all were classified Much Evident. Training was highest and equipment safety lowest in the stated summary. The narrow spread does not establish equivalent effectiveness because the domains contain different statements and no equivalence analysis was performed.

The summary provides an overview of perceived practices. It contains no accident counts, injury severity, exposure hours, or comparison over time. The study therefore supports discussing a perceived prevention system and its priorities, while actual accident-prevention performance remains unmeasured.

Table 15. Reported agreement on accident-prevention indicator rankings

Domain	Initial W / χ^2	Other W / χ^2	Reported p	Stated H_0 decision
Fall protection	0.57 / 15.39	—	—	—
Equipment safety	0.47 / 12.69	—	—	—
Supervision and coordination	0.44 / 11.88	—	—	—
Safety culture	0.35 / 9.45	0.350 / —	—	—
Training	0.26 / 7.02	0.250 / —	—	—

Note. Values separated by a slash are W and χ^2 . — means not specified. Different numerical versions and probability wording are retained. Fall protection had the largest initially reported coefficient, while training had the smallest. These coefficients address consistency in indicator ordering. They do not show that fall protection was more effective or that training was ineffective. No probability inequalities or hypothesis decisions were attached to these numerical findings, so none is supplied in the table.

The two training coefficients differ and remain unresolved. Without complete calculations and decision criteria, the prevention-domain analysis cannot support an additional significance claim. The descriptive ratings still identify topics for management review, but rank agreement should not be used to convert those perceptions into evidence that accidents were prevented.

4. Discussion

4.1 Meaning of the implementation profile

The study depicts favorable perceived implementation alongside a recurring difference between visible provision and sustained follow-through. Hazard communication, initial orientation, equipment availability, and inspections were rated strongly within their domains. Lower statements frequently concerned review, evaluation, response, replacement, and shared responsibility. These are connected stages of management rather than interchangeable practices. The findings therefore support examining whether information and resources lead to completed action.

The two summary means should not be read as evidence that a management system caused a level of accident prevention. Both sets largely describe activities and perceptions. They include related content, such as PPE and safety equipment or training and orientation. Agreement between their broad classifications may partly reflect this overlap; the study did not estimate an association between independent implementation and accident-outcome measures.

Haslam et al. (2005) offer a useful comparison because their investigations considered how multiple influences combined within actual accidents. The study does not supply equivalent incident evidence. Its contribution is a local profile of practices that can guide further inquiry into how controls function, while any explanation of accidents would require information about the event, work context, and exposure.

4.2 Agreement and organizational consistency

The first concordance analysis reports significant agreement for PPE and policies, while other management dimensions were nonsignificant. This does not mean the significant dimensions were the most protective, nor that a nonsignificant dimension was absent. Kendall's W concerns the ordering of indicators under the reported ranking arrangement. It cannot establish equal absolute ratings, equivalent resources, or uniform compliance across all projects.

The prevention-domain coefficients show greater reported agreement for fall protection than for training. That pattern identifies relative ordering within the stated analysis, but the different training coefficients and absence of a complete inferential record restrict conclusions. Differences among offices may merit examination, yet the study did not measure the project conditions or organizational mechanisms that would explain them. Standardization is a proposed response, not an evaluated treatment.

4.3 Implications for safety governance

The findings support connecting daily hazard checks, worker reports, and corrective-action closure. A recorded observation is most useful when responsibility and follow-up are clear. Initial orientation should similarly connect to participation, practical competence, and later evaluation. These priorities follow the lower-rated statements without assuming that a single training or reporting solution will address every site's needs.

Resource continuity deserves attention across PPE, safety equipment, and fall protection. A high availability score should be accompanied by scrutiny of suitability, inspection, and replacement. Cuya-Antonio and Gabriel (2021) provide a relevant public-institution comparison on protective resources and policy guidance, while differences in setting prevent direct transfer of their findings.

The proposed policy package includes daily hazard assessment, periodic policy review, PPE accountability, training evaluation, safety audits, accessible emergency information, integrated governance, technical review of safety plans, performance measurement, daily equipment monitoring, digital reporting, knowledge sharing, compliance support, contractor safety assessment, and technology integration. These recommendations describe intended action. Their legal and operational feasibility, costs, and effects were not tested by the study.

Implementation can begin by reviewing existing arrangements before adding parallel systems. Digital inspection tools, drones, or wearable devices should be assessed against a defined need, the quality of available data, and staff capacity. The ILO (2022) provides a broader framework for cooperation and prevention, but the study does not establish that a particular technology or administrative procedure is the best means of achieving those aims.

5. Conclusion

The study reported Much Implemented risk and safety management practices and Much Evident practices intended to prevent construction-site accidents in DPWH projects in Albay. Hazard identification and risk assessment led the implementation profile, while policies and procedures were comparatively lower. The prevention-domain means were closely grouped, with training highest and safety equipment lowest. The findings support strengthening review, evaluation, resource continuity, and responsibility for follow-through. Reported rank agreement was selective, and inconsistent numerical versions require verification. The evidence concerns perceptions of practices; it does not demonstrate accident reduction, verified regulatory compliance, or causal effectiveness. More complete methodological documentation and direct safety-performance evidence are needed to assess those outcomes.

References

- [1] Cuya-Antonio, O. C. M., & Gabriel, A. G. (2021). Analysis of the occupational safety and health practices of public organization in the Philippines. *International Journal of Management*, 12(1), 175–190. <https://doi.org/10.34218/IJM.12.1.2021.015>
- [2] Haslam, R. A., Hide, S. A., Gibb, A. G. F., Gyi, D. E., Pavitt, T., Atkinson, S., & Duff, A. R. (2005). Contributing factors in construction accidents. *Applied Ergonomics*, 36(4), 401–415. <https://doi.org/10.1016/j.apergo.2004.12.002>
- [3] International Labour Organization. (2022). *Safety and health in construction: ILO code of practice* (Revised ed.). <https://www.ilo.org/resource/other/safety-and-health-construction-revised-edition>