

The Practices in the Implementation of the Infrastructure Projects of the Department of Public Works and Highways (DPWH), Province of Albay

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ARTICLE INFORMATION	ABSTRACT
Article history: Published: October 2026 Keywords: Infrastructure Projects Implementation Practices Project Management Procurement Kendall Concordance Albay	The study examined practices and challenges in implementing Department of Public Works and Highways (DPWH) infrastructure projects in Albay for Fiscal Year 2025. Weighted means summarized respondent assessments across five practice domains and five challenge domains. Kendall's coefficient of concordance and reported chi-square statistics assessed agreement on indicator rankings among districts. Participant counts, sampling, instrument validation, and detailed collection procedures were not reported. Practices had an overall weighted mean of 4.33, interpreted as Much Implemented. Project planning and preparation ranked highest (4.63), while procurement and resource management ranked lowest (3.98). Challenges had an overall mean of 4.33, interpreted as Moderately Challenging, with project implementation and management highest (4.37) and logistics lowest (4.27). Procurement practices showed the strongest concordance ($W = 0.98$; $\chi^2 = 26.7$; $p < 0.005$). Project execution and supervision had $W = 0.66$ and $\chi^2 = 17.98$ with $p < 0.05$, but its stated hypothesis decision was inconsistent. Challenge-domain agreement was reported as nonsignificant. The findings support attention to inventory control, contractor follow-through, post-project evaluation, stakeholder concerns, and timely decisions. They describe perceived practices and difficulties rather than audited project performance or causal effects. Numerical and decision inconsistencies, incomplete methods, and unavailable detailed table contents limit interpretation.

1. Introduction

Public infrastructure delivery connects planning, procurement, technical execution, monitoring, and coordination with stakeholders. These activities are interdependent: a design may be clear while materials arrive late, or a project may meet a technical requirement while unresolved concerns affect implementation. Examining practices together with perceived challenges helps identify where formal arrangements and operational demands may not align.

The study concerned DPWH infrastructure projects in the Province of Albay for Fiscal Year 2025. It examined project planning and preparation, procurement and resource management, execution and supervision, monitoring and evaluation, and stakeholder coordination. A separate assessment covered planning and design challenges, financial management, implementation and management, procurement, and logistics. This provides a descriptive view of the project cycle without presuming that favorable practice ratings imply absence of difficulty. The Project Management Institute (PMI, 2021) presents project management through principles and performance domains, with attention to tailoring and outcomes. That distinction is useful for evaluating infrastructure administration: observing a process and achieving a public-service result are related but separate matters. The study reports perceptions of processes and challenges; it does not independently establish cost efficiency, timely completion, technical quality, or benefits to intended users.

Infrastructure research also cautions against relying on positive planning narratives as evidence of delivery success. Flyvbjerg (2014) reviewed recurring performance problems in megaprojects, including cost and schedule overruns. Those projects differ in scale and context from the unspecified projects assessed in Albay, so their findings cannot be transferred as local rates or explanations. They provide a reason to compare reported management arrangements with actual project records in further evaluation.

The Philippine Development Plan 2023–2028 includes infrastructure planning, programming, and asset management within its strategic framework (National Economic and Development Authority [NEDA], 2023). DPWH also issued its Performance Governance System Strategic Plan for FY 2023–2028 (DPWH, 2023). These policy contexts establish the relevance of implementation review; they do not demonstrate that the participating offices met a national target or that a particular management practice produced better outcomes.

The study addressed five questions: the extent of implementation practices across the five domains; significant agreement on their rank orders; challenges across five domains; significant agreement on those rankings; and policy recommendations. Descriptive extent and rank agreement are considered separately. Similar ordering does not establish equal performance across districts, and a high mean does not test the effectiveness of the process being rated.

2. Methods

2.1 Analytical approach and setting

The study presented quantitative assessments of implementation practices and challenges in DPWH infrastructure projects for Fiscal Year 2025. 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 findings refer to respondents and comparisons among DPWH districts or district engineering offices. The participant roles, number of offices, eligible population, respondent counts, and allocation among groups were not specified. No group size is inferred from the chi-square statistics or the ten indicators in each domain.

2.2 Measurement and procedures

The findings list ten indicators in each of five practice domains and five challenge domains. The measurement instrument's name, development, response anchors, interpretation thresholds, validation, and reliability were not reported. The reported practice labels were Very Much Implemented (VMI) and Much Implemented (MI). Challenges were generally described as Moderately Challenging (MC), with selected items explicitly called Very Moderately Challenging. That unusual phrase is retained without substituting a different scale category. 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 Project planning and preparation

Table 1. Project planning and preparation

Indicator	Weighted mean	Reported interpretation
Project objectives are clearly defined, specific, measurable, and aligned with intended outcomes before the project implementation begins	4.78	VMI
Project timelines are carefully developed, ensuring realistic scheduling of activities based on available resources and expected constraints	4.69	VMI
Environmental considerations and sustainability principles are integrated into the planning and preparation of infrastructure projects	4.68	VMI
Budget estimates are systematically prepared, reviewed, and justified to ensure financial feasibility and proper allocation of project funds	4.68	VMI
Community needs, priorities, and socio-economic conditions are assessed before finalizing project plans and proposals	4.62	VMI
Project plans are aligned with national government priorities, local development plans, and infrastructure development goals	4.61	VMI
Technical designs and engineering plans are thoroughly reviewed and validated by qualified professionals prior to approval	4.61	VMI
Potential risks and uncertainties are thoroughly identified, analyzed, and addressed during the project planning stage	4.58	VMI
Comprehensive feasibility studies, including technical, financial, and environmental aspects, are conducted prior to project approval and implementation	4.57	VMI

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Indicator	Weighted mean	Reported interpretation
All necessary permits, licenses, and clearances from relevant authorities are secured before project implementation begins	4.47	MI
Overall weighted mean	4.63	VMI

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

Clarity of objectives, scheduling, and integration of financial and environmental considerations received high ratings, while securing permits and clearances ranked comparatively lower. This suggests that the perceived strength of planning documentation should be distinguished from readiness to begin execution. The profile cannot establish the completeness of any individual design or the actual approval status of a project.

The findings support a readiness review that connects stated objectives with validated designs, resource requirements, and the necessary approvals. PMI (2021) treats project management as an approach that must be tailored to context and intended outcomes. Its guidance provides a conceptual frame, while the study supplies a local rating profile rather than an audit of conformity with that standard.

3.2 Procurement and resource management

Table 2. Procurement and resource management

Indicator	Weighted mean	Reported interpretation
Materials, equipment, and other necessary resources are procured on time to avoid delays in project implementation	4.21	—
Bidding procedures are conducted openly and transparently to promote accountability and equal opportunity among contractors	4.11	—
There is minimal wastage of construction materials due to proper planning, monitoring, and efficient usage practices	4.06	—
Available resources, including manpower, materials, and finances, are allocated efficiently to support project activities	4.01	—
Procurement processes strictly follow government rules, regulations, and standard procedures to ensure fairness and transparency	3.98	—
Procurement- related delays are minimized through efficient coordination, planning, and timely processing of requirements	3.95	—
Suppliers and contractors are selected based on qualifications, experience, technical capability, and compliance with requirements	3.92	—
Budget utilization is regularly monitored to ensure that expenditures remain within approved financial allocations	3.90	—
All financial transactions are accurately recorded, documented, and audited to ensure transparency and accountability	3.86	—
Inventory systems are properly maintained to track materials, supplies, and equipment used in project implementation	3.82	—
Overall weighted mean	3.98	MI

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

Timely acquisition and open bidding were rated more favorably than inventory records, financial documentation, and budget monitoring. Procurement is therefore best read as a connected process that includes control of resources after their acquisition. A high rating for delivery timeliness does not establish that inventory balances or expenditure records were complete.

The comparatively lower documentation items support reviewing the handover between procurement, stores, finance, and project teams. Reconciliation and traceability would make it possible to examine whether acquired resources reach their intended uses. These are proposed management responses; the study did not verify transactions, identify irregular expenditures, or estimate savings from improved inventory control.

3.3 Project execution and supervision

Table 3. Project execution and supervision

Indicator	Weighted mean	Reported interpretation
Construction activities consistently follow established technical standards, engineering designs, and quality specifications	4.68	VMI
Projects are implemented strictly according to the approved plans, specifications, and agreed timelines set during planning	4.66	VMI

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Indicator	Weighted mean	Reported interpretation
Safety protocols and occupational health standards are strictly enforced to protect workers and project stakeholders	4.56	—
Quality control measures are consistently implemented to ensure that outputs meet required standards and specifications	4.51	VMI
Work schedules and timelines are effectively followed, ensuring timely completion of assigned project tasks	4.38	MI
Skilled and qualified personnel are assigned to perform specific project tasks based on their expertise and competencies	4.38	MI
Project supervisors regularly monitor progress to ensure that activities are completed according to plans and schedules	4.29	MI
Issues and challenges encountered during project execution are promptly identified and addressed by responsible personnel	4.16	MI
Project completion targets and milestones are achieved within the expected timeframe and approved schedule	4.12	MI
Contractors strictly comply with contract terms, project requirements, and government regulations throughout implementation	4.05	MI
Overall weighted mean	4.38	MI

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

Technical compliance and adherence to approved plans were rated above contractor compliance, milestone attainment, and timely resolution of on-site issues. The pattern separates the perceived presence of engineering standards from the management processes needed to sustain delivery. It does not establish that any particular contractor failed to meet a contract or that a reported schedule was independently verified.

The lower-rated statements support attention to decision escalation and tracking of unresolved issues. Progress review should connect technical quality, contractual responsibilities, and schedule implications rather than consider them separately. Project records would be needed to determine which issues actually delayed completion and whether corrective actions improved performance; no such effect is estimated by these ratings.

3.4 Monitoring and evaluation

Table 4. Monitoring and evaluation

Indicator	Weighted mean	Reported interpretation
Site inspections are conducted periodically by authorized personnel to verify actual project conditions and progress	4.50	VMI
Problems identified during monitoring are addressed immediately to prevent further delays or complications	4.46	MI
Lessons learned and best practices are documented and utilized for improving future project implementations	4.41	MI
Performance indicators and measurable criteria are used effectively to assess the status and success of projects	4.39	MI
Documentation of project activities, outputs, and accomplishments is well-maintained for reference and accountability purposes	4.35	MI
Monitoring reports are accurately prepared, documented, and submitted to appropriate authorities for evaluation and review	4.34	MI
Evaluation results are used as a basis for decision-making and improvement of project implementation strategies	4.33	MI
Monitoring activities ensure compliance with established standards, policies, and regulatory requirements	4.22	MI
Regular monitoring of project progress is conducted to ensure alignment with plans, timelines, and performance targets	4.08	MI
Post- project evaluations are conducted to assess overall effectiveness, efficiency, and impact of completed projects	3.99	MI

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Indicator	Weighted mean	Reported interpretation
Overall weighted mean	4.31	MI

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

Periodic inspection was rated more favorably than routine tracking against performance targets and evaluation after completion. This distinguishes checking current conditions from assessing whether a project delivered its intended results. The study identifies an evaluation priority but does not establish that completed infrastructure was ineffective or that no post-project review took place. A stronger review process would connect inspection findings, management decisions, completion records, and follow-up evaluation. The relative mean for post-project evaluation suggests a need to examine how lessons are captured and used. Actual outcome indicators would be necessary to assess efficiency, service benefits, or long-term usefulness; favorable ratings of monitoring arrangements cannot substitute for those measures.

3.5 Stakeholder coordination

Table 5. Stakeholder coordination

Indicator	Weighted mean	Reported interpretation
Coordination with local government units is effectively carried out to ensure alignment with local development priorities	4.52	VMI
Information dissemination regarding project details, progress, and outcomes is adequate and accessible to stakeholders	4.49	MI
Stakeholder feedback is carefully considered and integrated into project planning, execution, and evaluation processes	4.45	MI
There is active collaboration with other government agencies to support the successful implementation of projects	4.43	MI
Public consultations are conducted when necessary to gather input and ensure community support for projects	4.41	MI
Partnerships with stakeholders significantly contribute to the success, sustainability, and acceptance of implemented projects	4.40	MI
Communication with stakeholders is clear, consistent, and timely throughout all stages of project implementation	4.38	MI
Community participation is encouraged to promote transparency, inclusivity, and shared responsibility in project activities	4.31	MI
Concerns, suggestions, and feedback from stakeholders are addressed promptly and appropriately by project implementers	4.26	MI
Conflicts and misunderstandings among stakeholders are effectively managed through proper communication and resolution strategies	3.70	MI
Overall weighted mean	4.33	MI

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

Coordination with local government units and information dissemination were rated above conflict management and responsiveness to concerns. Communication access and the resolution of competing interests are distinct activities. The findings suggest that formal coordination was more favorably perceived than handling disagreement, without identifying the causes or consequences of any particular stakeholder dispute. The study supports clearer routes for receiving concerns, assigning responses, and documenting their disposition. Consultation should be considered alongside the use made of feedback, rather than judged only by the occurrence of meetings. The ratings do not establish stakeholder satisfaction or equitable representation because no separate community-response distribution or participation record was reported.

Table 6. Summary of infrastructure implementation practices

Domain	Weighted mean	Label
Project planning and preparation	4.63	VMI
Project execution and supervision	4.38	MI
Stakeholder coordination	4.33	MI
Monitoring and evaluation	4.31	MI
Procurement and resource management	3.98	MI

Domain	Weighted mean	Label
Overall weighted mean	4.33	MI

Note. Domain and overall means are reproduced as reported. Means have no physical units; interpretation codes are defined in Methods. Planning and preparation was the only domain classified Very Much Implemented. Procurement and resource management was lowest, while execution, coordination, and monitoring occupied the intervening positions. The pattern identifies a perceived distinction between preparation and the resources and controls required during delivery.

The overall mean does not show that projects were completed within budget or schedule. The study did not provide distributions, variability estimates, or tests of domain-mean differences. The summary is a basis for operational review, with procurement records, completion evidence, and evaluation findings needed to assess actual delivery performance.

Table 7. Reported agreement on implementation indicator rankings

Domain	Initial W / χ^2	Other W / χ^2	Reported p	Stated H ₀ decision
Stakeholder coordination	0.43 / 11.74	—	p > 0.05	Accepted
Project planning and preparation	0.32 / 8.85	—	p > 0.05	Accepted
Monitoring and evaluation	0.23 / 6.29	—	p > 0.05	Accepted
Project execution and supervision	0.66 / 17.98	—	p < 0.05	Accepted; later described as significant
Procurement and resource management	0.98 / 26.7	—	p < 0.005	Rejected

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

Procurement and resource management had the strongest reported concordance and a stated rejection of the null hypothesis. Project execution and supervision also had a reported p < 0.05, but the same passage grouped it under acceptance of the null hypothesis. A later interpretation described its agreement as significant. Both the numerical threshold and conflicting decision are retained.

The remaining domains were reported as nonsignificant. This does not establish that their practices were absent or that offices had no common priorities. The tests concern ordering, not the causes of project outcomes. The execution decision needs reconciliation before a firm count of significant domains can be stated without qualification.

3.6 Planning and design challenges

Table 8. Planning and design challenges

Indicator	Weighted mean	Reported interpretation
Incomplete or unclear project plans and design specifications result in confusion and misinterpretation during implementation	4.53	Very Moderately Challenging
Frequent revisions in project designs cause delays and disrupt the smooth flow of construction activities	4.46	—
Time constraints during planning limit the thorough review and validation of engineering designs and technical documents	4.45	—
Insufficient coordination among planners, engineers, and stakeholders affects the overall quality of project design outputs	4.44	—
Lack of accurate site data and surveys leads to errors in planning and inappropriate design decisions	4.35	—
Environmental and geographical factors are not fully considered during planning, resulting in design-related issues during execution	4.34	—
Limited consultation with local communities leads to designs that do not fully address actual needs and conditions	4.32	—
Inadequate risk assessment during planning results in unforeseen technical and operational problems during project implementation	4.28	—
Poor integration of modern technologies and tools affects the accuracy and efficiency of project design processes	4.12	—
Delays in securing necessary permits and approvals negatively affect the timely finalization of project plans and designs	3.87	—
Overall weighted mean	4.32	MC

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

Unclear designs and repeated revisions received comparatively high challenge ratings, whereas approval delays and use of modern tools were lower in the profile. This makes design completeness and change control important review topics even though project planning received a favorable practice rating. The two sets of statements can coexist: an established planning process may still face implementation difficulties.

The findings support checking design information, review responsibilities, and the handling of changes before and during execution. They do not establish that insufficient planning caused a quantified delay. The wording of the statements expresses perceived mechanisms, but the study did not test those mechanisms against dated design revisions, site records, or actual schedule changes.

3.7 Budget and financial management challenges

Table 9. Budget and financial management challenges

Indicator	Weighted mean	Reported interpretation
Insufficient project funding limits the ability to complete activities according to planned scope and specifications	4.53	Very Challenging Moderately
Administrative procedures in financial processing cause delays in payments to contractors, suppliers, and workers	4.50	—
Delays in the release of funds significantly affect project timelines and disrupt scheduled construction activities	4.46	—
Rising costs of construction materials and labor affect the overall financial management and completion of projects	4.45	—
Inefficient allocation of financial resources leads to delays and imbalance in project implementation activities	4.43	—
Lack of strict financial monitoring results in improper utilization of project funds and resources	4.36	—
Limited financial transparency affects trust and accountability among stakeholders involved in project implementation	4.36	—
Inaccurate cost estimates during planning lead to budget shortages and financial adjustments during project implementation	4.32	—
Budget constraints lead to compromises in project quality, materials, and construction standards	4.17	—
Unexpected expenses and contingencies are not adequately addressed in the project budget planning process	4.01	—
Overall weighted mean	4.36	MC

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

Funding adequacy, financial processing, and release timing were rated as prominent financial challenges. The profile draws attention to the relationship between an approved allocation and the availability of funds when work must occur. It does not provide an expenditure audit, measure the size of a funding gap, or establish misconduct in financial administration.

A management response is to review financial milestones together with procurement and construction schedules, making responsibilities for processing and escalation explicit. Cost estimates and contingencies also require review even though they ranked relatively lower. The findings identify perceived concerns; they cannot determine whether additional funds, faster processing, or scope adjustment would be the most effective response for a particular project.

3.8 Project implementation and management challenges

Table 10. Project implementation and management challenges

Indicator	Weighted mean	Reported interpretation
Delays in resolving on-site issues contribute to extended project duration and increased operational costs	4.54	Very Challenging Moderately
Adverse weather conditions significantly disrupt construction schedules and affect overall project timelines	4.53	—
Delays in project implementation occur due to poor coordination among project teams and involved stakeholders	4.50	—

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Indicator	Weighted mean	Reported interpretation
Poor communication among project personnel results in misunderstandings and delays in decision-making processes	4.45	—
Shortage of skilled workers and technical personnel affects the quality and efficiency of project execution	4.44	—
Weak supervision and monitoring lead to inconsistencies in work quality and non-compliance with project standards	4.39	—
Ineffective project management practices result in poor scheduling, planning, and execution of tasks	4.35	—
Lack of proper safety measures exposes workers to risks and affects the smooth implementation of project activities	4.34	—
Non-compliance of contractors with agreed project specifications leads to quality issues and rework	4.23	—
Inadequate availability of equipment and tools affects the timely completion of construction activities	3.95	—
Overall weighted mean	4.37	MC

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

Delayed resolution of on-site issues, adverse weather, and coordination difficulties received the strongest challenge ratings. These concerns point to the need for timely decisions and adaptable execution arrangements. The lower equipment-availability rating does not establish that tools were sufficient at every site or that equipment never constrained a project.

The practical implication is to distinguish issues that can be resolved within a project team from those requiring technical, financial, or administrative approval. Contingency planning should be linked to documented exposure rather than general assumptions about local conditions. The study did not quantify weather losses, labor shortages, rework costs, or delay duration, so the profile cannot allocate their relative contributions to performance.

3.9 Procurement challenges

Table 11. Procurement challenges

Indicator	Weighted mean	Reported interpretation
Delays in procurement processes affect the timely acquisition of materials, equipment, and services needed for project implementation	4.50	Very Moderately Challenging
Issues in supplier performance, such as delayed delivery or substandard materials, negatively affect project outcomes	4.45	—
Complicated and lengthy bidding procedures slow down the selection of qualified suppliers and contractors for the project	4.45	—
Lack of transparency in procurement processes may lead to inefficiencies and reduced trust among stakeholders	4.45	—
Poor coordination between procurement units and project teams leads to inefficiencies in resource allocation	4.39	—
Limited number of qualified and accredited suppliers affects the quality and availability of construction materials	4.38	—
Inadequate procurement planning results in mismatches between project requirements and acquired resources	4.36	—
Delays in approval of procurement documents affect the timely initiation and continuation of project activities	4.36	—
Absence of contingency procurement plans affects project continuity during unexpected supply disruptions	4.14	—
Errors in procurement documentation lead to delays, compliance issues, and possible audit concerns	3.93	—
Overall weighted mean	4.34	MC

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

Procurement delay was rated above documentation errors and contingency arrangements. Supplier performance, bidding complexity, and transparency concerns were also prominent in the profile. These items describe perceived obstacles and should not be treated as verified findings of improper procurement or poor-quality supplies in an identified transaction.

The study supports examining processing times, supplier follow-through, and coordination between procurement and project teams. Efficiency improvements should preserve required controls and transparency. The research did not compare procurement methods or identify which administrative step accounts for delay, so it cannot justify removal of safeguards or establish that a particular reform would improve delivery.

3.10 Logistics challenges

Table 12. Logistics challenges

Indicator	Weighted mean	Reported interpretation
Inadequate storage facilities lead to damage, loss, or deterioration of construction materials and supplies	4.45	—
Lack of coordination between logistics teams and project managers causes delays and inefficiencies in operations	4.45	—
Limited availability of transport vehicles and equipment affects the efficient distribution of materials and resources	4.43	—
Traffic conditions, road accessibility, and infrastructure limitations affect the timely transport of materials to project sites	4.38	—
logistics planning results in inefficient movement and handling of materials, equipment, and personnel	4.38	—
Improper scheduling of deliveries results in either shortages or excess materials at the construction site	4.36	—
Lack of real-time tracking systems makes it difficult to monitor the movement and status of materials and deliveries	4.15	—
Delays in the delivery of construction materials significantly disrupt project schedules and affect overall timelines	4.14	—
High transportation and handling costs increase overall project expenses and affect budget efficiency	4.14	—
Transportation difficulties, especially in remote or geographically challenging areas, hinder timely delivery of resources	3.81	—
Overall weighted mean	4.27	MC

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

Storage, coordination, and transport availability were more strongly rated challenges than remote access and transport cost. This directs attention to internal logistics arrangements alongside external delivery conditions. The logistics-planning statement is retained in its reported wording; its favorable noun phrase followed by a negative consequence limits certainty about the intended item meaning.

The findings support coordinating delivery schedules with storage capacity and actual work requirements. A shared record of requested, dispatched, received, and used materials would permit a more direct assessment of logistics performance. The study did not measure stock losses, vehicle utilization, or delivery reliability, so these remain proposed monitoring areas rather than established deficiencies of a specified magnitude.

Table 13. Summary of challenges in infrastructure implementation

Domain	Weighted mean	Label
Project implementation and management challenges	4.37	MC
Budget and financial management challenges	4.36	MC
Procurement challenges	4.34	MC
Planning and design challenges	4.32	MC
Logistics challenges	4.27	MC
Overall weighted mean	4.33	MC

Note. Domain and overall means are reproduced as reported. Means have no physical units; interpretation codes are defined in Methods.

Implementation and management, finance, and procurement led the challenge profile. Logistics was comparatively lower, but all domains were classified Moderately Challenging. The findings support coordinated attention to multiple stages of delivery rather

than treating a low-ranked challenge as absent.

The identical overall practice and challenge means do not cancel one another or show inconsistency. They summarize different statements and labels. A functioning management process may still encounter difficulties; determining whether it successfully addressed them would require actual project evidence beyond ratings of their perceived extent.

Table 14. Reported agreement on challenge indicator rankings

Domain	Initial W / χ^2	Other W / χ^2	Reported p	Stated H_0 decision
Planning and design	0.47 / 12.74	—	$p > 0.05$	Accepted
Procurement	0.44 / 11.87	—	$p > 0.05$	Accepted
Logistics	0.35 / 9.96	—	$p > 0.05$	Accepted
Budget and financial management	0.33 / 8.96	—	$p > 0.05$	Accepted
Project implementation and management	0.15 / 4.13	—	$P > 0.5$	Accepted

Note. Values separated by a slash are W and χ^2 . — means not specified. Different numerical versions and probability wording are retained.

All challenge domains were described as lacking statistically significant agreement, although planning and design had the largest reported W . The result means that significant concordance was not established under the reported analysis. It does not prove complete disagreement or identify which offices ranked a particular challenge differently.

The probability for project implementation and management is retained as $P > 0.5$, rather than being silently changed to a more familiar threshold. The underlying ranking matrices and complete test specifications were not supplied. Relative differences in W therefore support cautious description, while explanations involving project complexity or district capacity would require additional evidence.

4. Discussion

4.1 Practices alongside implementation challenges

The study reported a stronger planning profile than procurement and resource management, while implementation and management, finance, and procurement led the challenge profile. This combination directs attention to the transition from preparation to delivery. Formal planning can be rated favorably while resource control, timely decisions, and execution still present difficulties. The study did not estimate a causal sequence between these ratings.

The identical overall means for practices and challenges have different meanings because the domains describe different constructs and use different labels. A practice mean of 4.33 cannot be subtracted from a challenge mean of 4.33 to indicate balance or success. The ratings are useful within their own stated content; a common numerical scale does not establish equivalent measurement.

Flyvbjerg (2014) provides a broader research comparison by identifying recurrent delivery difficulties in megaproject management. The local findings similarly justify scrutiny of actual delivery evidence, but do not demonstrate the same mechanisms or performance record. No project size, cost overrun, completion delay, or benefit-realization dataset was reported, and the participating projects should not be relabeled megaprojects.

4.2 Extent and agreement across districts

Procurement and resource management had the lowest practice mean but the highest reported concordance. This illustrates why rating level and agreement must be separated. Respondents can agree on the ordering of relatively lower-rated practices. That agreement does not establish that procurement was effective, transparent in every instance, or superior to other domains.

The project-execution significance statement and hypothesis decision are inconsistent, limiting any firm classification of that domain. Challenge-domain tests were described as nonsignificant. This means the reported analyses did not establish significant rank agreement; it does not prove that offices faced entirely different challenges or that a standardized procedure would be ineffective.

The study supports reviewing common requirements while allowing implementation support to reflect documented office needs. Group-specific scores and ranking matrices would be needed to determine where and how priorities differed. Explanations involving geography, project complexity, administrative capacity, or resources remain untested in these findings.

4.3 Implications for project governance

The detailed profiles identify several points for management review: readiness for permits and approvals, inventory accountability, contractual follow-through, post-project evaluation, and response to stakeholder concerns. These are specific operational questions rather than a mandate to create a new system for every low-ranked item. Existing responsibilities, records, and escalation arrangements should first be examined against actual project requirements.

The policy recommendations assign permit tracking and inter-agency processing to planning units and district leadership; inventory management to property, supply, and project personnel; contractor review to construction and engineering management; and completed-project evaluation to monitoring and evaluation units. They also recommend grievance handling, procurement planning and supplier review, financial contingencies, equipment management, standardized documentation, integrated logistics, and a unified digital project platform. A unified platform is a proposed means of connecting information, not an outcome demonstrated by the study. Common definitions, responsibility for updates, and use of information in decisions would be necessary to assess its value. PMI (2021) emphasizes tailoring project approaches to context and outcomes, which supports evaluating whether an administrative change addresses a defined implementation problem.

NEDA (2023) provides a national context for linking infrastructure planning and asset management, while DPWH (2023) identifies the agency's strategic-plan framework. The study's recommendations can be considered within those contexts, but their alignment

does not establish compliance or effectiveness. Any proposed reform should be evaluated through documented process and project outcomes before stronger performance claims are made.

5. Conclusion

The study reported Much Implemented practices and Moderately Challenging implementation concerns in DPWH infrastructure projects in Albay for Fiscal Year 2025. Planning and preparation had the highest practice mean, while procurement and resource management had the lowest. Implementation and management led the challenge profile. The findings support closer attention to resource records, contractor follow-through, post-project evaluation, stakeholder concerns, and timely resolution of issues. Procurement showed strong reported rank agreement; other findings require cautious interpretation because of inconsistent decisions and incomplete statistical documentation. The evidence does not establish actual project success, verified financial performance, or causal relationships. Complete methods and reconciliation of the numerical record are necessary before submission and stronger inference.

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