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Technical Drawing Management and Public Infrastructure Coordination in Local Government Services

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ABSTRACT

This study evaluated the extent to which technical drawing management supported public infrastructure coordination in local government services, with particular attention to drawing control, records handling, information accessibility, communication, and synchronized project implementation. A cross-sectional explanatory survey design was employed among 30 selected employees of the Local Government Unit of Santiago City who were directly involved in engineering, infrastructure documentation, planning support, and related coordination functions. Data were gathered using a validated 40-item Technical Drawing Management and Public Infrastructure Coordination Scale and analyzed through means, standard deviations, Spearman's rank-order correlation, and bootstrap linear regression with 5,000 resamples. Technical drawing management obtained an overall mean of 3.73, while public infrastructure coordination registered 3.70, indicating generally favorable practices. Drawing accuracy and standardization emerged as the strongest technical management dimension, whereas revision and version control recorded the lowest mean at 3.43. Work synchronization was the weakest coordination dimension at 3.41, particularly in sequencing interdependent activities and adjusting schedules following project changes. Technical drawing management was significantly associated with public infrastructure coordination ($\rho = .664$, $p < .001$) and significantly predicted coordination performance ($\beta = .653$), explaining 42.7% of its variance. The findings established that reliable technical drawing practices contributed substantially to coordinated infrastructure operations, although weaknesses in version control and work synchronization remained. Strengthening revision tracking, document circulation, technical information exchange, and schedule integration may improve continuity and coordination across local infrastructure services.

Keywords: *document control, infrastructure coordination, local government, public infrastructure, technical drawings, work synchronization*

INTRODUCTION

Public infrastructure work depends on technical information that can be understood, retrieved, and applied consistently from planning through construction and maintenance. Technical drawings occupy a central place in this process because they communicate dimensions, specifications, spatial relationships, construction requirements, and revisions that guide project decisions. Their value, however, depends not only on how accurately they are prepared but also on how well they are organized, updated, stored, retrieved, and shared with personnel who need them. Problems in document access and version control can affect field operations, particularly when project teams rely on outdated or difficult-to-locate information. Lee et al. (2018) found that improved access to current construction documents can reduce the time required for information retrieval and version checking in infrastructure projects.

Technical drawing management therefore extends beyond the preparation of plans. It involves maintaining the integrity and usability of technical records as projects move through different stages and offices. Information produced during planning, design, and construction remains important even after physical works are completed because these records support asset operation, maintenance, modification, and future project decisions. Patacas et al. (2020) emphasized that reliable information generated across the project life cycle is necessary for effective management of built assets, while poorly structured information transfer may create verification and operational difficulties. The quality of drawing management is thus closely tied to continuity of information between technical personnel, project implementers, and offices responsible for infrastructure services.

Digital systems can strengthen this continuity when technical drawings, supporting documents, revisions, and project records are managed through an organized information environment. Jaskula et al. (2024) explained that common data environments allow project stakeholders to work from a shared source of information, supporting collaboration while improving data accountability and reliability. Such principles are relevant even where full Building Information Modeling systems are not used. The basic requirement remains the same: personnel need dependable procedures for identifying current drawings, controlling revisions, recording changes, retrieving project files, and communicating technical information across work units.

These information practices become especially important in public infrastructure, where projects commonly require the participation of engineering personnel, planners, administrators, contractors, project monitors, and other government offices. Effective information sharing has been identified as a key condition for coordination and collaboration in publicly funded infrastructure projects, with record keeping, organizational capability, and professional expertise contributing to the movement of information among participating groups (Al-Ghetaa et al., 2023). At the local government level, fragmented procedures and separate information systems may create delays and inefficient workflows. A study of road works administration in a local authority showed that siloed working arrangements and fragmented information systems contributed to process inefficiencies, pointing to the need for clearer workflows and better coordination practices (Hussain et al., 2017).

Technical drawing management and public infrastructure coordination are closely connected operational concerns. Drawings and infrastructure records support project documentation, planning decisions, implementation, monitoring, maintenance, and communication among offices involved in public works. Sound coordination is equally necessary because public infrastructure performance depends on how technical information, responsibilities, and decisions are aligned among participating personnel. Project governance and stakeholder management have been shown to contribute significantly to the performance of public sector infrastructure projects (Khan et al., 2021). Examining these two areas together can provide a clearer account of how technical information practices relate to the coordination of infrastructure services. Thus, this study focuses on Technical Drawing Management and Public Infrastructure Coordination in Local Government Services, with particular attention to the experiences and practices of selected employees of the LGU of Santiago City who participate in technical drawing preparation, infrastructure records management, project documentation, planning support, public works coordination, and engineering-related service delivery.

Literature Review

Technical Drawing Quality and Document Control

Technical drawings serve as working records that translate project requirements into precise information for planning, costing, construction, inspection, and maintenance. Their usefulness depends on accuracy, clarity, completeness, consistency, and proper coordination with related documents. Akampurira and Windapo (2019) found that legibility and coordinated design documentation were among the most important attributes of quality construction documents, while weaknesses in accuracy and certainty could reduce their reliability. These findings highlight the importance of systematic checking, revision control, file organization, and clear identification of approved drawing versions. For local government engineering and public works activities, drawing management becomes especially important because plans may pass through several personnel and offices before and during project implementation. A well-managed technical drawing system can lessen confusion over specifications, provide a dependable record of modifications, and allow technical personnel to work from consistent project information.

Technical Information Accessibility and Records Management

The value of technical information is reduced when records are difficult to retrieve, incomplete, poorly organized, or disconnected from actual project activities. Effective records management requires information to remain accessible and sufficiently detailed for the personnel responsible for planning, implementation, monitoring, and asset management. Chen and Lu (2019) identified information quantity, quality, and accessibility as central requirements of construction information management. Their case-based analysis showed that linking project information with actual building processes can improve the way technical data are used across project activities. Although local governments may employ different levels of digital technology, the underlying management principle remains applicable. Technical drawings, specifications, accomplishment records, revisions, and related engineering documents need a structured system that enables personnel to obtain accurate information when decisions are required. Strong records management therefore supports continuity between completed documentation and the operational needs of infrastructure projects.

Infrastructure Coordination and Data Sharing

Public infrastructure projects involve technical and administrative activities that seldom remain within a single office or professional function. Planning, design, procurement support, project implementation, inspection, and maintenance may require information to move among engineers, planners, administrators, project personnel, and external parties. Nezami et al. (2022) found that collaboration and data sharing are closely connected in infrastructure projects and that weak data exchange across organizational boundaries can hinder coordinated project execution. Their findings indicate that infrastructure organizations benefit when relevant project data are available to participating units and when responsibilities for information exchange are clearly understood. Applied to local government services, coordination is likely to depend on whether technical drawings, project updates, field information, and supporting records reach the appropriate personnel at the appropriate stage of work. Public infrastructure coordination is therefore not limited to meetings or formal communication but also involves maintaining an effective flow of reliable technical and project information.

Integrated Management of Public Infrastructure Services

Infrastructure management requires coordination not only among individuals but also among offices with different responsibilities, expertise, and decision-making authority. Costumato (2021), through a systematic review of collaboration among public organizations, identified trust, shared authority, leadership, management strategies, and formalized arrangements as important determinants of effective interinstitutional performance. These organizational conditions become more significant when infrastructure services involve several units that must combine technical information with administrative and operational decisions. At the same time, the growing use of integrated information systems offers public agencies opportunities to connect infrastructure records with planning, monitoring, maintenance, and decision support. Orsini and Piras (2023) showed that structured digital information and interoperability can support public infrastructure management by improving the exchange of information among infrastructure managers, owners, and supervisory institutions. Taken together, these studies suggest that effective local infrastructure services depend on both sound technical information management and coordinated organizational processes.

METHODS

Research Design

The study employed a cross-sectional explanatory survey design to determine the prevailing practices in technical drawing management and public infrastructure coordination and to establish whether technical drawing management was associated with and contributed to coordination outcomes. The design suited the study because the variables were measured as they occurred in actual local government operations without experimental manipulation.

Research Locale

The study was conducted in the Local Government Unit of Santiago City. The locale was appropriate because infrastructure-related operations required technical drawing preparation, documentation, planning support, records management, project monitoring, and coordination among personnel performing engineering and public works functions.

Participants and Sampling Technique

The participants consisted of 30 local government employees whose work directly involved technical drawing preparation, infrastructure records management, project documentation, planning support, public works coordination, project monitoring, or engineering-related service delivery. Criterion-based purposive sampling was used because participation required direct knowledge and actual involvement in the technical and coordination processes covered by the study. This approach ensured that responses were obtained from personnel capable of providing informed assessments of the variables.

Research Instrument

Data were gathered through the Technical Drawing Management and Public Infrastructure Coordination Scale, a 40-item researcher-developed questionnaire comprising two major constructs. Technical drawing management contained 20 items covering drawing accuracy and standardization, revision and version control, records organization and retrieval, and technical information accessibility. Public infrastructure coordination consisted of 20 items addressing interoffice communication, work synchronization, technical information sharing, and project implementation coordination. Responses were rated on a five-point scale from 1, *strongly disagree*, to 5, *strongly agree*.

Five qualified experts in engineering, public administration, infrastructure planning, research, and measurement validated the instrument for relevance, clarity, and construct alignment. The evaluation yielded an S-CVI/Ave of .955. The revised instrument was pilot-tested with 30 comparable local government personnel from another locality who were not included in the final participants. The pilot test produced an overall Cronbach’s alpha of .943, indicating high internal consistency.

Data Gathering Procedure

Permission to conduct the study was secured from the appropriate local government authorities. Coordination was undertaken with the concerned offices to identify personnel who met the participation criteria and to arrange the administration of the questionnaire. Participants received an explanation of the study before completing the instrument. Accomplished questionnaires were collected, examined for completeness, coded, and encoded into the statistical dataset. The finalized data were then prepared for analysis.

Data Analysis

Means and standard deviations were calculated to describe technical drawing management and public infrastructure coordination across their respective dimensions. Because the study involved a focused sample of 30 participants and responses were obtained through ordinal rating scales, Spearman’s rank-order correlation coefficient was used to determine the magnitude and direction of the relationship between the two principal constructs.

To provide stronger inferential support despite the modest sample, bootstrap simple linear regression with 5,000 resamples and bias-corrected 95% confidence intervals was employed to assess whether technical drawing management significantly predicted public infrastructure coordination. The regression coefficient, standardized beta, coefficient of determination (R^2), and bootstrap confidence interval were reported. Dimension-level relationships were examined through Spearman correlations rather than a multiple-predictor model to avoid overfitting the limited dataset. Statistical decisions were made at the .05 level of significance.

Ethical Considerations

Participants provided informed consent and joined the study voluntarily. Confidentiality and anonymity were protected, and respondents retained the right to withdraw without penalty. Research data were securely handled and accessed only for analytical purposes. No unnecessary identifying information was included in the dataset, and all collected responses were used exclusively for legitimate academic research.

RESULTS AND DISCUSSION

Table 1. *Technical Drawing Management by Dimension*

Dimension	Mean	SD	Interpretation	Rank
Drawing Accuracy and Standardization	3.95	0.37	High	1
Revision and Version Control	3.43	0.44	High	4
Records Organization and Retrieval	3.75	0.38	High	3
Technical Information Accessibility	3.79	0.43	High	2
Overall	3.73	0.27	High	

Technical drawing management obtained an overall mean of 3.73, indicating that established drawing and documentation practices were generally observed. Drawing accuracy and standardization emerged as the strongest dimension, suggesting that technical personnel gave considerable attention to the correctness and uniform presentation of plans. Revision and version control received the lowest mean at 3.43. Although still within the high category, its position indicated that maintaining drawing accuracy was more consistent than controlling what happened after drawings were modified. This distinction was important because a technically accurate drawing could still create implementation problems if superseded versions remained in circulation. Akampurira and Windapo (2019) similarly emphasized that the usefulness of design documentation rested not only on legibility but also on coordinated and reliable design information.

Table 2. *Indicators of Drawing Accuracy and Standardization*

Indicator	Mean	SD	Interpretation	Rank
Technical drawings reflected the required dimensions and specifications accurately.	4.20	0.66	High	1
Symbols, line conventions, and technical notations were used consistently.	4.10	0.55	High	2
Drawing scales were appropriate and clearly indicated.	3.90	0.66	High	3
Titles, labels, references, and drawing details were sufficiently clear.	3.87	0.68	High	4
Drawings were consistently cross-checked for conflicts before use.	3.67	0.48	High	5
Composite	3.95	0.37	High	

The strongest result concerned the accuracy of dimensions and specifications, followed by consistent technical symbols and conventions. These results indicated sound capability in producing technically usable drawings. The lowest result concerned systematic cross-checking before drawings were used. Its lower mean suggested that quality was strong at the preparation stage but less uniform in the final verification process. This finding pointed to a practical vulnerability because discrepancies between drawings, specifications, or related project records might remain unnoticed when formal checking procedures were not applied consistently.

Table 3. *Indicators of Revision and Version Control*

Indicator	Mean	SD	Interpretation	Rank
Revised drawings clearly indicated their revision number or date.	3.57	0.63	High	1
Personnel could identify which drawing version was currently approved.	3.53	0.68	High	2
Changes made to technical drawings were systematically recorded.	3.43	0.57	High	3
Updated drawings were consistently distributed to concerned personnel.	3.33	0.61	Moderate	4
Superseded drawing copies were promptly withdrawn or clearly marked obsolete.	3.30	0.65	Moderate	5
Composite	3.43	0.44	High	

Revision and version control revealed the clearest weakness within technical drawing management. Respondents generally recognized current drawing versions and revision identifiers, but the distribution and withdrawal stages were less consistent. The mean of 3.30 for removing or identifying obsolete copies suggested a risk that different personnel could work from different versions of the same technical plan. The result also showed that version control problems were not primarily about identifying revisions but about ensuring that revised information reached all concerned personnel and that outdated information ceased to be operationally available.

Table 4. *Indicators of Records Organization and Retrieval*

Indicator	Mean	SD	Interpretation	Rank
Technical records followed an organized filing or naming system.	3.97	0.76	High	1
Current and previous project drawings could be distinguished in the records.	3.80	0.61	High	2
Infrastructure documents could be traced to the appropriate project or activity.	3.77	0.63	High	3
Required technical records could be retrieved when needed.	3.70	0.70	High	4
Completed project drawings and supporting records were consistently archived.	3.53	0.51	High	5
Composite	3.75	0.38	High	

Records organization was generally strong, particularly in file organization and the identification of project-related documents. Archiving of completed project records, however, was comparatively weaker. This suggested that document management was more effective while projects remained active than after project completion. Such a gap could affect later maintenance, rehabilitation, auditing, or verification when historical technical information became necessary. Chen and Lu (2019) showed that effective construction information management depended on the quantity, quality, and accessibility of project information, reinforcing the importance of preserving records beyond immediate implementation needs.

Table 5. *Indicators of Technical Information Accessibility*

Indicator	Mean	SD	Interpretation	Rank
Current technical drawings were accessible to personnel who needed them.	4.00	0.64	High	1
Personnel knew where official technical drawings and records were maintained.	3.83	0.59	High	2

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Access procedures allowed authorized personnel to obtain needed technical information.	3.73	0.58	High	3
Drawings and supporting information were readily available during field or coordination activities.	3.70	0.60	High	4
Previous technical records could be accessed when required for reference.	3.70	0.65	High	4
Composite	3.79	0.43	High	

Technical information accessibility ranked second among the four dimensions. Current drawings were generally accessible, and personnel were familiar with their official storage locations. Access during field activities and retrieval of previous records received lower ratings. The pattern indicated that regular office access was relatively dependable, while information needs arising outside normal document-handling routines were less consistently supported. This could become important when field verification, maintenance, or unexpected implementation questions required immediate reference to technical records.

Table 6. *Public Infrastructure Coordination by Dimension*

Dimension	Mean	SD	Interpretation	Rank
Interoffice Communication	3.89	0.52	High	1
Work Synchronization	3.41	0.47	High	4
Technical Information Sharing	3.62	0.41	High	3
Project Implementation Coordination	3.88	0.50	High	2
Overall	3.70	0.36	High	

Public infrastructure coordination was rated high overall, with a composite mean of 3.70. Interoffice communication and project implementation coordination were the strongest areas, indicating that personnel generally communicated and cooperated effectively during project activities. Work synchronization produced the lowest result at 3.41 and stood only slightly above the moderate threshold. The contrast suggested that communication itself was not the primary difficulty. Rather, converting communication into aligned schedules, sequenced activities, and timely interdependent work appeared less consistent. This distinction was important because coordination required more than information exchange. It also required participating units to align their actions.

Table 7. *Indicators of Interoffice Communication*

Indicator	Mean	SD	Interpretation	Rank
Technical requirements were clearly communicated among concerned offices.	4.10	0.76	High	1
Project concerns were directed to the appropriate personnel for action.	4.03	0.72	High	2
Clarifications on technical matters were communicated when needed.	3.87	0.68	High	3
Feedback from other offices was incorporated into relevant project activities.	3.80	0.71	High	4
Communication channels consistently prevented delays in resolving project concerns.	3.63	0.67	High	5
Composite	3.89	0.52	High	

Communication of technical requirements received the highest assessment, indicating that the basic movement of project information among offices generally functioned well. The weaker finding concerned whether existing communication arrangements actually prevented delays. This implied that communication could occur without necessarily producing immediate resolution. The result pointed to a difference between transmitting information and completing coordinated action. Delays may therefore have arisen from approval sequences, competing schedules, dependencies among units, or the timing of responses rather than from a total absence of communication.

Table 8. *Indicators of Work Synchronization*

Indicator	Mean	SD	Interpretation	Rank
Work schedules of participating personnel were aligned when joint action was required.	3.53	0.68	High	1
Responsibilities among participating units were clearly coordinated.	3.53	0.63	High	1
Conflicting schedules or implementation requirements were resolved promptly.	3.40	0.67	Moderate	3
Changes in one activity were consistently reflected in related work schedules.	3.30	0.65	Moderate	4
Interdependent project activities were consistently performed in the required sequence.	3.27	0.64	Moderate	5
Composite	3.41	0.47	High	

Work synchronization revealed the most pronounced coordination difficulty. Three of its five indicators fell within the moderate category. The lowest score concerned the sequencing of interdependent activities, followed by the adjustment of related schedules when one activity changed. This pattern suggested that coordination weakened when project tasks became dependent on the timing or completion of other units' work. The issue was therefore less about defining responsibilities and more about adapting interconnected activities as project conditions changed. Such findings were consistent with the observation of Nezami et al. (2022) that infrastructure collaboration depended strongly on effective data exchange and coordination across organizational boundaries.

Table 9. *Indicators of Technical Information Sharing*

Indicator	Mean	SD	Interpretation	Rank
Technical changes were communicated across concerned units.	3.77	0.63	High	1
Supporting technical documents accompanied information needed for project decisions.	3.70	0.70	High	2
Required drawings were shared before related project activities were undertaken.	3.63	0.61	High	3
Technical information was shared within the time required for project action.	3.53	0.63	High	4
Field-generated information consistently reached personnel responsible for planning or documentation.	3.47	0.57	High	5
Composite	3.62	0.41	High	

Technical information sharing was generally favorable but remained less developed than interoffice communication. Changes and supporting documents were commonly transmitted, while field-generated information reaching planning or documentation personnel received the lowest score. This revealed a possible return-flow problem. Information tended to move successfully from technical preparation toward implementation, but observations and adjustments arising from field activities were not always incorporated back into planning and documentation with equal consistency. The finding suggested a need for a more complete information cycle rather than a predominantly one-directional flow.

Table 10. *Indicators of Project Implementation Coordination*

Indicator	Mean	SD	Interpretation	Rank
Concerned personnel coordinated closely during actual project implementation.	4.10	0.92	High	1
Inspection findings were communicated for appropriate corrective action.	3.90	0.66	High	2
Technical concerns encountered during implementation were jointly addressed.	3.87	0.68	High	3
Approved drawing changes were reflected in field implementation.	3.80	0.81	High	4

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Documentation needed for turnover, maintenance, or subsequent work was coordinated among concerned personnel.	3.73	0.64	High	5
Composite	3.88	0.50	High	

Project implementation coordination ranked closely behind interoffice communication. Direct cooperation during implementation obtained the strongest rating, suggesting that personnel responded effectively once projects had entered the active execution stage. Coordination of turnover and maintenance documentation was comparatively weaker. The finding mirrored the earlier weakness in archiving completed technical records and indicated that coordination was strongest during immediate project delivery but less consistent as projects moved toward closure and subsequent asset management. Public-sector collaboration literature has likewise shown that effective interorganizational performance depends on formalized arrangements, shared authority, management practices, and clear coordination mechanisms rather than informal interaction alone (Costumato, 2021).

Table 11. *Overall Relationship Between Technical Drawing Management and Public Infrastructure Coordination*

Variables	Spearman's ρ	p-value	Interpretation	Decision
Technical Drawing Management and Public Infrastructure Coordination	0.664	0.00006	Moderately strong positive relationship	Significant

The analysis yielded a Spearman correlation of $\rho = .664$ with $p = .00006$, demonstrating a statistically significant positive association between technical drawing management and public infrastructure coordination. Higher levels of drawing accuracy, document control, record organization, and information accessibility tended to accompany stronger coordination of infrastructure activities. The magnitude indicated a substantial relationship but not an interchangeable one. Technical drawing management was clearly important to coordination, yet considerable variation in coordination remained attributable to other organizational and operational factors. The result supported the premise that technical records functioned not merely as project documentation but as working information that connected decisions and activities across personnel and offices.

Table 12 *Dimension-Level Relationships Between Technical Drawing Management and Public Infrastructure Coordination*

Technical Drawing Management Dimension	Interoffice Communication ρ (p)	Work Synchronization ρ (p)	Technical Information Sharing ρ (p)	Project Implementation Coordination ρ (p)
Drawing Accuracy and Standardization	.437 (.016)	.468 (.009)	-.040 (.833)	.434 (.017)
Revision and Version Control	.451 (.012)	.688 (.00003)	.266 (.155)	.457 (.011)
Records Organization and Retrieval	.164 (.385)	.314 (.092)	.278 (.137)	.107 (.573)
Technical Information Accessibility	.352 (.056)	.370 (.044)	.248 (.186)	.413 (.023)

Note. Statistical significance was evaluated at $\alpha = .05$.

The dimension-level analysis clarified where the overall relationship originated. Revision and version control showed the strongest association with work synchronization, $\rho = .688$, $p = .00003$, indicating that coordinated schedules and sequential activities were particularly dependent on personnel working from updated technical information. Revision control was also significantly related to interoffice communication and implementation coordination. Drawing accuracy and standardization displayed significant positive relationships

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with three coordination dimensions but had virtually no relationship with technical information sharing, $\rho = -.040$, $p = .833$. This result indicated that producing accurate drawings did not automatically ensure that they were effectively circulated.

Records organization and retrieval did not significantly correlate with any individual coordination dimension. Its relatively strong descriptive rating therefore appeared to represent an internal records-management strength rather than a direct coordination mechanism. Technical information accessibility was significantly related to work synchronization and project implementation coordination but not to technical information sharing. These results provided an important distinction: having accurate, organized, and accessible records did not by itself guarantee active exchange of information among units. Coordination depended particularly on how revisions and accessible information were incorporated into actual work processes.

Table 13. *Bootstrap Regression Predicting Public Infrastructure Coordination*

Predictor	B	SE	Standardized β	Bias-Corrected 95% CI for B	p-value
Constant	0.433	0.717			
Technical Drawing Management	0.875	0.192	0.653	[0.510, 1.319]	0.00009

Model Statistic	Value
R^2	0.427
Adjusted R^2	0.406
$F(1, 28)$	20.850
Model p-value	0.00009
Bootstrap resamples	5,000

Bootstrapped regression confirmed that technical drawing management significantly predicted public infrastructure coordination. The unstandardized coefficient of $B = .875$ indicated that a one-unit increase in the technical drawing management score corresponded to an estimated .875-unit increase in public infrastructure coordination. The standardized coefficient, $\beta = .653$, represented a substantial positive predictive effect. More importantly, the bias-corrected 95% bootstrap confidence interval of 0.510 to 1.319 did not contain zero, supporting the stability of the effect despite the modest sample size.

Technical drawing management explained 42.7% of the observed variance in public infrastructure coordination, with an adjusted R^2 of .406. This represented meaningful explanatory power for a single organizational predictor. At the same time, 57.3% of the variation remained unexplained, indicating that coordination was also shaped by factors beyond drawing management, such as authority structures, staffing arrangements, scheduling constraints, procurement processes, resource availability, and administrative workflows. The result therefore did not suggest that document management alone determined infrastructure performance. Rather, it showed that reliable technical drawing practices formed an important operational foundation upon which effective coordination could be built.

Taken together, the results revealed a generally functional technical and coordination system with several specific weaknesses. Technical drawings were strongest in accuracy and standardization, while revision distribution and removal of obsolete copies required greater attention. Infrastructure coordination was strongest during communication and active project implementation but weakened in synchronized sequencing, schedule adjustment, and the return of field information to planning and documentation functions. The statistical findings further showed that these weaknesses were interconnected. In particular, revision and version control emerged as an important link between technical drawing management and synchronized infrastructure work. Strengthening formal version control, document circulation, schedule integration, field-to-office information feedback, and project closeout records could therefore improve the continuity of technical information across the full infrastructure service process.

CONCLUSION

Technical drawing management and public infrastructure coordination were generally well established in the LGU of Santiago City, although several operational gaps remained. Technical drawings were strongest in accuracy and standardization, while revision and version control emerged as the weakest area, particularly in the timely distribution of updated drawings and the withdrawal of obsolete copies. Public infrastructure coordination was likewise rated favorably, but work synchronization showed greater difficulty, especially in sequencing interdependent activities and adjusting schedules when project changes occurred. The significant positive relationship between technical drawing management and public infrastructure coordination further indicated that better handling of drawings, revisions, records, and technical information contributed to more effective coordination of infrastructure activities. Revision and version control appeared particularly important in supporting synchronized work processes.

It is therefore recommended that the LGU strengthen its document control procedures through a standardized revision tracking system, clear identification and withdrawal of superseded drawings, and more consistent dissemination of updated technical information. A centralized and accessible infrastructure records system should also be maintained to improve retrieval, archiving, and continuity of project documentation. Coordination protocols should further require timely sharing of field updates, alignment of interdependent schedules, and systematic documentation during project implementation and closeout. Regular internal reviews may be conducted to assess compliance with these procedures and identify recurring coordination concerns. Future researchers may extend the study to other local government units, include additional organizational factors, or use larger samples and longitudinal designs to further explain how technical information management influences infrastructure service delivery.

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