

The Effect of Document Monitoring Systems on Contract Document Management at PT PLN (Persero) UPT Manado

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Abstract

Effective document management is essential to organizational administration, particularly for contract documents that underpin work execution, supervision, evaluation, and payment processes. PT PLN (Persero) UPT Manado, the transmission unit responsible for electricity networks in North Sulawesi and part of Gorontalo, has adopted a spreadsheet-based monitoring system integrated with a digital archive website to support contract document management. However, preliminary observation indicated that this system does not yet fully cover all contract documents — particularly minutes of payment, work inspection, work handover, and work completion — requiring employees to rely on manual confirmation via WhatsApp or physical checking, reducing administrative efficiency. This study examines the effect of the document monitoring system on contract document management at PT PLN (Persero) UPT Manado. A quantitative causal-associative design was employed, with data collected via a Likert-scale questionnaire from 46 employees selected through simple random sampling (from a population of 85, using the Slovin formula with a 10% margin of error) and analyzed using simple linear regression in SPSS 26. The document monitoring system was operationalized through the DeLone and McLean (2003) Information Systems Success model (use and information quality), while contract document management was operationalized through the ISO 15489-1:2016 standard (usability, reliability, and integrity). Results show a significant positive effect of the document monitoring system on contract document management ($Y = 8.886 + 0.811X$; $t = 16.369$, Sig. < 0.001), explaining 85.9% of the variance in contract document management ($R^2 = 0.859$), with a very strong correlation ($R = 0.927$). These findings indicate that document monitoring is a dominant determinant of contract document management quality, though the system's incomplete coverage of certain document types suggests that further expansion could yield additional improvement.

Keywords: Document Monitoring System, Contract Document Management, Information Systems Success, ISO 15489, State-Owned Enterprise

1. Introduction

Document management is a critical administrative function that supports organizational operations. Documents serve as sources of information, evidence, and a basis for implementation, supervision, and decision-making; consequently, they must be managed in an orderly, systematic, and accessible manner to enable fast and accurate information retrieval. Sound document management not only supports administrative effectiveness but also minimizes the risk of document loss, administrative error, and work delays.

Contract documents represent one category requiring particularly careful management, as they underpin the working relationship between a company and its partners and form the basis for work execution, supervision, evaluation, and payment. As the volume of managed documents increases, many organizations have adopted document monitoring systems to support structured recording, tracking, control, and storage — systems expected to provide rapid status information, ease document retrieval, and minimize administrative error.

PT PLN (Persero) UPT Manado, the transmission implementation unit responsible for operating and maintaining the electricity transmission network across North Sulawesi and part of Gorontalo, has adopted such a system. Within the company's Construction Control and Contract

Administration Division (Dalkon), which manages contract administration for various working partners including Approval Drawings, Work Orders (SPK), Minutes of Payment (BAP), Minutes of Work Inspection (BAPP), Minutes of Work Handover (BASTP), Minutes of Work Completion (BAPS), and Partner Performance Reports a spreadsheet-based monitoring system integrated with a digital archive website supports document recording and tracking.

However, preliminary observation during the researcher's internship revealed that the monitoring system does not yet fully cover all contract documents. While documents such as Approval Drawings are tracked via spreadsheet, several administrative documents — including Minutes of Payment, Work Inspection, Work Handover, and Work Completion — are not fully recorded in the system, despite being routinely received from working partners as part of the contract administration process. This gap means that document status information is not always directly available through the monitoring system, requiring employees to confirm document receipt with partners via WhatsApp or conduct manual checks additional steps that, while not always time-consuming, reduce administrative efficiency and may hinder smooth contract document management.

Prior research indicates that information systems, archive digitization, and monitoring systems generally support document management effectiveness, but most such studies focus on system implementation, application development, or archive management in general terms, applying qualitative or system-design approaches rather than quantitatively testing the effect of monitoring systems on contract document management specifically. This gap is particularly pronounced within PT PLN (Persero) UPT Manado, where no prior quantitative evidence exists on this relationship. This study addresses that gap by providing empirical evidence on the effect of the document monitoring system on contract document management, aiming to inform efforts to improve contract administration effectiveness at PT PLN (Persero) UPT Manado. Although the phenomenon was observed specifically within the Dalkon division, the monitoring system involves employees from multiple divisions, and the study accordingly draws respondents from across relevant working units.

Based on this background, this study aims to determine the effect of the document monitoring system on contract document management at PT PLN (Persero) UPT Manado, testing the hypothesis that the document monitoring system has a positive and significant effect on contract document management.

2. Literature Review

Information Systems Success Model

The Information Systems Success model developed by DeLone and McLean (2003) posits that system use (use), supported by information quality, contributes to improved work-process effectiveness. In this study, the document monitoring system is conceptualized as an information system supporting the recording, tracking, and status updating of contract documents, operationalized through four indicators: frequency of use, completeness of data input, timeliness of recording, and consistency of status updates.

ISO 15489-1:2016 Records Management Standard

ISO 15489-1:2016 characterizes sound document management through usability, reliability, and integrity — reflected in the ease of document access, the speed of document retrieval, and the accuracy of information maintained throughout the management process. In this study, contract document management is operationalized through three corresponding indicators: ease of document access, speed of document retrieval, and accuracy of document management.

Prior Research

Several prior studies inform this research. Pasanda (2022) found that management information systems positively and significantly affect employee performance at a regional water utility office. Midriyan, Rahmawati, and Apriliyani (2024) found that a dynamic archive management information system effectively improved records management, particularly in retrieval, storage, and security. Sholeh and Wahyudin (2021) similarly found that management information systems and competence

positively affect work effectiveness. Rahim and Selao (2023), working within PT PLN (Persero) UPT Surabaya, developed a web-based contract administration and monitoring application to replace shared Excel files prone to human error, though their study followed a system-development rather than a statistical-testing approach. Additional studies (Pertwi, 2025; Syahrudin & Fikri, 2025; Anggraini & Nurbaiti, 2023; Grataridarga et al., 2022; Purwanto & Setyawan, 2024; Pontoh et al., 2016) consistently report that monitoring systems, digital archiving, and web-based records systems improve document search speed, administrative efficiency, and data security, though predominantly through qualitative or system-design approaches. Collectively, these studies confirm the positive role of information technology in document management, but reveal a scarcity of quantitative evidence specifically testing the effect of document monitoring systems on contract document management — a gap this study addresses, including within the PT PLN (Persero) environment where Rahim and Selao's (2023) prior work remained design-oriented rather than statistically tested.

Conceptual Framework and Hypothesis

Building on the Information Systems Success model and ISO 15489-1:2016, this study conceptualizes the Document Monitoring System (X) as an independent variable measured through use and information-quality dimensions (frequency of use, data-input completeness, recording timeliness, and status-update consistency), and Contract Document Management (Y) as a dependent variable measured through usability, reliability, and integrity (ease of access, retrieval speed, and management accuracy). A document monitoring system used routinely, supported by complete, timely, and consistently updated information, is expected to support improved contract document management. Accordingly, the following hypotheses are proposed:

H₀: The document monitoring system has no significant effect on contract document management at PT PLN (Persero) UPT Manado.

H₁: The document monitoring system has a positive and significant effect on contract document management at PT PLN (Persero) UPT Manado.

3. Research Methods

Research Design

This study employs a quantitative method with a causal-associative design, aimed at analyzing the cause-effect relationship between the document monitoring system (independent variable) and contract document management (dependent variable), tested through simple linear regression analysis.

Research Site

The study was conducted at PT PLN (Persero) UPT Manado, North Sulawesi, from February to July 2026, covering preliminary observation, proposal supervision, data collection and processing, and reporting.

Population and Sample

The population comprised all 85 employees of PT PLN (Persero) UPT Manado actively using the document monitoring system in contract document management. The sample size was determined using the Slovin formula with a 10% margin of error:

$$n = N / (1 + N \cdot e^2) = 85 / (1 + 85 \times 0.01) = 85 / 1.85 \approx 45.95 \approx 46 \text{ respondents}$$

Respondents were selected through simple random sampling, giving each population member an equal chance of selection.

Data Collection

Primary data were collected through a structured Likert-scale questionnaire (1 = strongly disagree to 5 = strongly agree) distributed to employees directly involved in contract document management, supplemented by direct observation used to inform the study's background. Secondary data were drawn from company documents, internal reports, books, journals, and other relevant written sources.

Operational Variables

The Document Monitoring System (X) was measured through four indicators derived from the Information Systems Success model: frequency of use (3 items), data-input completeness (3 items),

recording timeliness (3 items), and status-update consistency (3 items) — 12 items in total. Contract Document Management (Y) was measured through three indicators derived from ISO 15489-1:2016: ease of document access (3 items), document-retrieval speed (3 items), and document-management accuracy (3 items) — 9 items in total.

Data Analysis Technique

Data were analyzed using SPSS version 26 through descriptive statistics (mean, minimum, maximum, and standard deviation) and inferential statistics. Instrument quality was assessed through validity testing (Pearson product-moment correlation, item valid if $r\text{-count} > r\text{-table}$ of 0.291 at $n = 46$, $\alpha = 5\%$) and reliability testing (Cronbach's Alpha ≥ 0.60). The hypothesis was tested through simple linear regression ($Y = a + bX + e$), the partial t-test (significant if $\text{Sig.} < 0.05$ or $t\text{-count} > t\text{-table}$), and the coefficient of determination (R^2).

4. Results and Discussion

Respondent Characteristics

Of the 46 respondents, 24 (52.2%) were female and 22 (47.8%) were male, indicating a relatively balanced gender composition. By education level, 18 respondents (39.1%) held a senior-high/vocational diploma, 12 (26.1%) held a Diploma III, 13 (28.3%) held a Diploma IV/Bachelor's degree, and 3 (6.5%) held a Master's degree, reflecting a diverse educational background dominated by senior-high/vocational graduates.

Validity and Reliability

All 12 items measuring the Document Monitoring System (X) produced $r\text{-count}$ values between 0.447 and 0.832, and all 9 items measuring Contract Document Management (Y) produced $r\text{-count}$ values between 0.600 and 0.842 — all exceeding the $r\text{-table}$ threshold of 0.291, confirming that every item is valid. Reliability testing produced Cronbach's Alpha values of 0.889 for the Document Monitoring System and 0.890 for Contract Document Management, both well above the 0.60 threshold, confirming that the research instrument is reliable and internally consistent.

Simple Linear Regression Analysis

Table 1. Simple Linear Regression and t-Test Results

Model	B	Std. Error	t	Sig.
(Constant)	8.886	—	—	—
Document Monitoring System (X)	0.811	—	16.369	< 0.001

Source: SPSS output, 2026. Dependent Variable: Contract Document Management; $t\text{-table} = 2.040$.

The resulting regression equation is $Y = 8.886 + 0.811X$. The constant of 8.886 represents the baseline level of contract document management when the monitoring system is not accounted for, while the regression coefficient of 0.811 indicates a positive relationship: each one-unit increase in document monitoring system use is associated with a 0.811-unit increase in contract document management quality.

Hypothesis Testing

The t-test produced a $t\text{-count}$ of 16.369, exceeding the $t\text{-table}$ value of 2.040, with $\text{Sig.} < 0.001$ (< 0.05). Accordingly, H_0 is rejected and H_1 is accepted: the document monitoring system has a positive and significant effect on contract document management at PT PLN (Persero) UPT Manado.

Table 2. Model Summary

Model	R	R Square	Adjusted R Square
1	0.927	0.859	—

Source: SPSS output, 2026. Predictors: (Constant), Document Monitoring System.

The correlation coefficient (R) of 0.927 indicates a very strong, positive relationship between the document monitoring system and contract document management. The R Square value of 0.859 shows that the document monitoring system explains 85.9% of the variance in contract document management, while the remaining 14.1% is attributable to factors outside the model, such as employee competence or internal company policy.

Discussion

The valid and reliable instrument results provide a sound methodological basis for interpreting the regression findings as a genuine reflection of field conditions rather than a measurement artifact. The regression coefficient of 0.811 is substantial for a social-science relationship, indicating that changes in monitoring-system use meaningfully affect document management quality rather than reflecting a weak or spurious association. Combined with the highly significant t-test ($t = 16.369$, $\text{Sig.} < 0.001$) and the high coefficient of determination ($R^2 = 0.859$), the document monitoring system emerges as a dominant — not merely supplementary — determinant of contract document management quality at PT PLN (Persero) UPT Manado.

These results empirically validate the DeLone and McLean (2003) Information Systems Success model within this context: the use and information-quality dimensions, operationalized through frequency of use, data completeness, recording timeliness, and status-update consistency, translate into organizational outcomes measured through the ISO 15489-1:2016 usability, reliability, and integrity characteristics. The findings also align with the Task-Technology Fit principle (Goodhue & Thompson, 1995), which holds that system benefits are optimized when available features genuinely address user task needs — the strong effect observed here suggests that the monitoring system already in place within the Dalkon division reasonably matches employees' operational needs.

Nonetheless, the background findings indicate that the system's coverage does not yet extend to all contract document types, particularly the Minutes of Payment, Work Inspection, Work Handover, and Work Completion documents. This suggests that the measured effect reflects the system's potential primarily for the document types already covered; extending coverage to all contract document types, consistent with the Records Continuum principle (Upward, 1996), would likely further improve overall contract document management effectiveness.

Compared with prior research, these findings reinforce the pattern identified by Pasanda (2022) and Sholeh and Wahyudin (2021) that management information systems positively affect employee performance and work effectiveness, while narrowing the focus specifically to contract document management and yielding a notably higher explanatory power ($R^2 = 0.859$) than comparable qualitative or system-design studies, including Rahim and Selao's (2023) work within PT PLN (Persero) UPT Surabaya. This study therefore fills the previously identified gap: limited quantitative evidence on the effect of document monitoring systems on contract document management, particularly within the PT PLN (Persero) UPT Manado context.

Practical Implications

Several implementation steps follow from these findings. First, PT PLN (Persero) UPT Manado should expand the monitoring system's coverage to include the Minutes of Payment, Work Inspection, Work Handover, and Work Completion documents currently outside its scope, reducing continued reliance on manual confirmation. Second, given the strong contribution of usage frequency, the company should encourage employees to treat the monitoring system as the primary — not merely supplementary — tool for every stage of contract document handling, reinforced through socialization or mandatory recording procedures. Third, standard operating procedures should specify maximum recording timeframes and minimum required data fields to strengthen data completeness and timeliness. Fourth, designating a responsible officer for status updates within each involved division would help ensure consistency independent of individual initiative. Fifth, given that unexplained variance remains (14.1%), the company should also attend to complementary factors such as employee competence and inter-divisional workflow clarity to achieve more comprehensive improvement.

5. Conclusion

This study examined the effect of the document monitoring system on contract document management at PT PLN (Persero) UPT Manado using data from 46 employees. The research instrument measuring both variables was confirmed valid and reliable. Simple linear regression yielded the equation $Y = 8.886 + 0.811X$, indicating a positive relationship in which greater utilization of the document monitoring system is associated with better contract document management. Hypothesis

testing confirmed that the document monitoring system has a positive and significant effect on contract document management ($t = 16.369 > t\text{-table } 2.040$, Sig. < 0.001), rejecting H_0 and accepting H_1 , with the relationship's strength further confirmed by a coefficient of determination of 0.859 — indicating that 85.9% of the variance in contract document management is explained by document monitoring system use, with the remaining 14.1% attributable to factors outside the model.

These findings indicate that the document monitoring system plays a significant and substantial role in supporting more structured, accessible, quickly retrievable, and accurate contract document management at PT PLN (Persero) UPT Manado. The company is encouraged to expand system coverage to presently unmonitored document types, establish clear operating standards for recording timeliness and data completeness, and assign clear responsibility for status updates across divisions. Future research is encouraged to incorporate additional variables such as employee competence or organizational work culture, and to extend the analysis to other PLN units or comparable organizations to test the generalizability of these findings.

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