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Article

Document process management for efficiency in the handling of additional budget demands in local governments of Peru, 2025

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Abstract: The aim of this study was to propose and validate a document process management model to optimize the efficiency of handling additional budget demands in Peruvian local governments during 2025, addressing delays caused by poor traceability, lack of document standardization, limited interdepartmental coordination, and rework. A quantitative, applied approach was used, with a pre-experimental longitudinal design and explanatory scope. The sample comprised 31 municipalities, which were administered a Document Registration Form (FRD) and a Document Process Management Questionnaire (CGPD) with a Likert scale, both before (AS-IS) and after (TO-BE) implementation. According to the Shapiro-Wilk, Student's t and Wilcoxon signed-rank tests for related samples, cycle time was reduced from 52.77 to 34.29 days ($t = 4.528$; $p < 0.001$), and rework decreased in all files ($Z = -4.998$; $p < 0.001$). Deadline compliance (SLA) rose from 41.9% to 100%, end-to-end (E2E) procedures from 48.4% to 100%, and the questionnaire score increased from 4.15 to 4.90 out of five ($t = -14.968$; $p < 0.001$). It is concluded that the model significantly increases efficiency in meeting additional demands, confirming the general and the four specific hypotheses; nonetheless, contrasting it with a control group and a larger sample is recommended.
Keywords: document management, administrative efficiency, local governments, business process management, additional demands

1. Introduction

The management of documentary processes is a strategic axis for the efficiency of the local public administration. In Peru's local governments, the procedures related to the formulation and response to additional demands for budgetary resources represent a critical stage in ensuring the efficient, transparent, and timely use of public funds. The Organization for Economic Cooperation and Development (OECD, 2023) points out that countries that strengthen the management of their financial and documentary processes achieve better resource allocation, greater institutional control, and more citizen trust.

The implementation of document management systems and virtual parties tables in Peru has made it possible to digitize a large part of administrative procedures. However, deficiencies persist in document quality, technical training, and technological interoperability (Huamán & Medina, 2022; Villalobos & Linarez, 2023), which generates observations, returns, and delays in the processing of additional requests. These restrictions limit compliance with Sustainable Development Goals 8 and 16, and affect budget execution. From industrial engineering applied to the

public sector, the challenge is to redesign processes, reduce cycle times and optimize document traceability to ensure verifiable institutional results.

On an international scale, digital administration has established itself as a tool for transparency and efficiency, although the lack of interoperability and document uniformity limits its advantages (Tamara & Espinoza, 2023). Various studies show that organizations that combine digitalization with training and procedure manuals reduce their management times by up to 30% (Villalobos & Linarez, 2023). Recent empirical evidence in local governments confirms this relationship: in district municipalities, administrative simplification is positively associated with better document management practices (Aguado-Riveros et al., 2026), and the digitization of correspondence with real-time tracking produces reductions of more than 60% in processing times (Kisworo, 2026). Experiences such as Estonia's show that electronic document management systems at the local level sustain interoperability and quality of service (Pappel et al., 2018).

At the national level, even though the modernization of the Peruvian State has promoted virtual service systems, disparities persist in document management. According to the logbook of the Document Management System of additional demands of the Ministry of the Interior (MININTER, 2025), all the cases processed by the municipalities in the study area during 2025 were observed for documentary or technical deficiencies, with attention times that varied between 14 and 93 days. This scenario delays the timely execution of public resources: according to the Friendly Consultation of the Ministry of Economy and Finance (MEF, 2025), the average efficiency of these municipalities was 72%, below the national average (79%). The absence of standardized processes and insufficient technical training of personnel cause rework that harms traceability, document quality and response times.

The study was carried out in Peruvian local governments – district and provincial municipalities in various areas of the country – that submit their additional requests for budgetary resources to MININTER, an entity that coordinates and validates before the MEF in accordance with Article 17 of Law No. 32185, Public Sector Budget Law for Fiscal Year 2025 (Peru, 2024), within the framework of the digitalisation of public management promoted by the Presidency of the Council of Ministers (PCM, 2022).

1.1. Problem factors

The delay in meeting the additional demands is due to structural and operational factors that affect the efficiency of the documentary processes. The first is the lack of standardized procedures: many municipalities do not have templates, manuals, checklists or operational guides, which generates heterogeneity in the quality of the files, formal errors, missing data and poorly referenced annexes. The lack of documentary standards impedes administrative traceability by limiting common control and verification criteria (García & Alonso, 2021).

A second factor is the insufficient training of staff responsible for formulating, reviewing and administering requests; the absence of technical skills produces functional overload and affects the speed and quality of the procedure (Villalobos & Linarez, 2023), aggravated by high staff turnover. A third factor is the poor interoperability between local government and ministry systems, which requires manual conversions, duplication of records and successive validations; interoperability is the axis of administrative efficiency, as it facilitates the exchange of information and avoids duplication (Tamara & Espinoza, 2023). Added to this is the deficient inter-institutional integration: the lack of network governance reduces the effectiveness of policies when procedures depend on the successive validation of multiple instances (Sumano, 2022). Finally, the absence of automated flows and performance indicators (KPIs) generates bottlenecks; process automation reduces cycle times and eliminates redundancies, increasing institutional productivity (Arteaga et al., 2025).

1.2. Theoretical framework

The study is based on six complementary approaches. The Theory of Process Management states that every organization improves its performance by continuously reviewing, redesigning, and optimizing its workflows, eliminating redundancy and reducing cycle times through reengineering (Hammer & Champy, 2005); applied to the public sector, it guides the mapping of document flows (Business Process Management, BPM) and the AS-IS/TO-BE

redesign. The literature confirms that BPM and process reengineering measurably improve the efficiency of public administrations (Gulledge & Sommer, 2002; Rinaldi et al., 2015), although its success depends on critical factors such as leadership, organizational culture, and staff capabilities (Syed et al., 2018).

The Theory of Document Management conceives information as a strategic resource whose correct administration guarantees transparency, integrity and traceability; the standardization of documents and the digitization of their life cycle strengthen accountability (García & Alonso, 2021). The Theory of Dynamic Capabilities explains how entities adapt to changing environments by developing internal learning and innovation competencies (Teece, 2018), which underpins the dimension of staff capabilities. The Theory of Technological Interoperability holds that the ability to exchange and reuse information between systems is essential to digital government (Tamara & Espinoza, 2023) and justifies end-to-end digitization (E2E). The Theory of Public Governance recognizes that state management depends on network cooperation between institutions and levels of government (Rhodes, 2017; Sumano, 2022), and supports inter-area and inter-institutional coordination. Finally, the Theory of Administrative Efficiency establishes that the organization must achieve its goals with rational use of resources, balancing quality and productivity (Chiavenato, 2007), and provides the criterion for evaluating the model through indicators of cycle time, observed files, and compliance with deadlines.

1.3. Background

The OECD (2023) argues that the effectiveness of the public sector rests on technological interoperability, accountability, and standardization of processes; countries such as Denmark, Estonia and South Korea, by integrating document management systems, reduced processing times by more than 30%. At the regional level, Sumano (2022) shows that institutional coordination and transparency reduce management periods, while Zela et al. (2024) show that the absence of connection between levels of government in Andean countries duplicates efforts. Arteaga et al. (2025) report that subnational entities that use process management models increase their budget execution by up to 20%. At the local level, Giraldo (2024) documented response time reductions of up to 40% in municipalities of Metropolitan Lima after adopting electronic document management, and Gavelán et al. (2025) link the low quality of municipal spending with the lack of effective document procedures. Recent comparative evidence in local governments in developing countries confirms that digital governance improves service efficiency when technological adoption is accompanied by organizational capacity and process redesign (Temba, 2025; Aguado-Riveros et al., 2026).

1.4. Problem, objectives and hypotheses

In view of the above, the research answered the question: how does the management of documentary processes influence the efficiency of meeting additional demands in local governments in Peru, 2025? The general objective was to propose and validate a document process management model to improve this efficiency. The specific objectives were: (a) to diagnose the current process (AS-IS) by identifying flows, times per stage and causes of observation; (b) design the proposed model (TO-BE) incorporating standards, roles, digital traceability, interoperability and training; (c) piloting the model in a sample of local governments, measuring results before and after; and (d) define guidelines and a dashboard of indicators (KPIs) for their institutionalization.

The general hypothesis (HG) postulated that the implementation of the model reduces cycle time and rework, and increases compliance with deadlines and digital traceability. The specific hypotheses were: H1, document standardization increases the percentage of complete files in first review; H2, the definition of roles and times reduces the total time of the process (T_0–T_5); H3, digital interoperability increases the percentage of procedures attended within the deadline (SLA); and H4, training and inter-area coordination reduce observations and documentary rework.

2. Materials and methods

According to the Frascati Manual (OECD, 2015), the research was of an applied type, aimed at solving a practical problem through the design, implementation and validation of a document process management model. The approach was quantitative, based on the objective measurement of verifiable indicators before and after the

intervention (Hernández & Mendoza, 2018), and the scope was explanatory, seeking to demonstrate the cause-effect relationship between the management of documentary processes (independent variable) and the efficiency in meeting additional demands (dependent variable).

The design was longitudinal pre-experimental experimental, with measurement before (pretest, AS-IS situation) and after (posttest, TO-BE situation). It was pre-experimental because there was no random assignment: we worked with an intact group of local governments selected for convenience and operational relevance. The longitudinal nature allowed measuring changes in efficiency indicators and ensuring objective evidence of the results.

2.1. Unit of analysis, population and sample

The unit of analysis was the additional demand file processed by local governments in Peru during 2025, with a record of dates, observations, cycle times and administrative results. The population was made up of all the files of additional demands for budgetary resources submitted by provincial and district municipalities during fiscal year 2025, subject to a uniform regulatory framework (Peru, 2024) and similar documentary procedures (reception, review, observation, correction and final decision). Files formally entered in 2025 were included, with traceability and time recording by stage (T_0–T_5); those from non-municipal entities, those with incomplete or inconsistent information, and those that were filed, cancelled, or withdrawn before their final evaluation were excluded. The final sample was made up of 31 municipalities.

2.2. Techniques and instruments

Three complementary techniques were used, combined to triangulate the data and increase internal validity: documentary analysis, Likert-type survey and structured observation. The documentary analysis – systematic inspection of the files of each requirement and of the records of the municipal systems – made it possible to calculate the efficiency indicators (percentage of observations, total cycle time T_0–T_5, compliance with deadlines and administrative result) and constituted the main source of the before/after comparison. The Likert survey captured the perceptions of administrative and technical staff on five dimensions of document management, and structured observation, supported by checklists, verified the implementation of the model in the field.

Two instruments were applied, built from the operationalization of variables. The Document Process Management Questionnaire (CGPD), a five-point Likert type (1 = strongly disagree; 5 = strongly agree), measured the independent variable through five dimensions: (D1) standardization and document quality; (D2) process flow and traceability; (D3) digitalisation and interoperability (E2E); (D4) staff capabilities; and (D5) inter-area coordination. The Documentary Record Form (FRD) collected objective information on the dependent variable: total cycle time and by stage (T_0–T_5), rework (observations/returns), compliance with deadlines, and administrative result. Both instruments were applied in pre-test and post-test. Table 1 summarizes operationalization.

Table 1. Operationalization of variables and dimensions

Variable	Dimensions	Main indicators
Document Process Management (VI)	D1 Standardization and document quality; D2 Flow and traceability; D3 Digitalization and Interoperability (E2E); D4 Staff capacities; D5 Inter-area coordination	CGPD score (Likert 1–5) by dimension and total; % of complete files in first review; % of stages with recorded time
Efficiency in meeting additional demands (DV)	Cycle time (total and per stage); Rework; Compliance with deadlines (SLA); Administrative result	Cycle time T_0–T_5 (days); No. of observations per file; % of compliance with deadlines; % of end-to-end (E2E) procedures

Source: Authors.

2.3. Data validity, reliability and analysis

The content validity of both instruments was established through the judgment of three experts—in public management, administrative processes, and industrial engineering—who evaluated each item according to clarity, coherence, relevance, and sufficiency (Hernández & Mendoza, 2018). With these judgments, Aiken's coefficient V was calculated by item and by dimension: $V \geq 0.70$ was considered valid and $V \geq 0.80$ was considered optimal; items below the threshold were reformulated. The reliability of the CGPD was assessed with Cronbach's alpha coefficient ($\alpha \geq 0.70$ acceptable; ≥ 0.80 good; ≥ 0.90 excellent), and that of the FRD with the Kuder-Richardson coefficient 20 (KR-20) or Cohen's concordance index (κ) when two evaluators participated.

The statistical analysis was performed in SPSS. Given the sample size ($n = 31 < 50$), the normality of the post-pretest differences was assessed with the Shapiro-Wilk test. Variables with normal distribution were contrasted with Student's t-test for related samples, and those that did not meet the assumption of normality, with Wilcoxon's non-parametric test. In all cases, a significance level $\alpha = 0.05$ was set: the null hypothesis was rejected when $p \leq \alpha$. The research respected the ethical principles of integrity, confidentiality of institutional information, and exclusively academic use of the data, without manipulation of records.

3. Results

3.1. Comparative descriptive analysis

Table 2 compares the main efficiency indicators before and after implementing the model in the 31 municipalities. The total cycle time decreased from 52.77 to 34.29 days (−35 %) and, notably, its standard deviation fell from 22.69 to 1.13 days, which shows a strong homogenization of the process between entities. The total CGPD score increased from 4.15 to 4.90 out of five, with the dispersion reduced from 0.30 to 0.11. Compliance with deadlines (SLA) went from 41.9% to 100%, and end-to-end (E2E) procedures from 48.4% to 100%.

Table 2. Efficiency indicators before (AS-IS) and after (TO-BE) of the model (n = 31)

Indicator	Pre-test	Postest	Variation
Total cycle time (days), average	52,77	34,29	−35.0%
Total cycle time (days), SD	22,69	1,13	−95.0%
CGPD total score (1–5), mean	4,15	4,90	+0,75
CGPD Total Score (1–5), SD	0,30	0,11	−63.3%
Meeting Deadlines — SLA (%)	41,9	100	+58.1 p.p.
End-to-end procedures — E2E (%)	48,4	100	+51,6 p.p.
Time-logged stages (%)	92,3	100	+7,7 p.p.

Note: SD = standard deviation; p.p. = percentage points. Source: SPSS.

3.2. Normality test

The Shapiro-Wilk test on post-pretest differences (Table 3) indicated that the total cycle time (Sig. = 0.261) and the total CGPD dimensions score (Sig. = 0.177) presented normal distribution (Sig. > 0.05), so the parametric Student's t-test was applied. The other dimensions showed significance values less than 0.05, which determined the use of Wilcoxon's non-parametric test.

Table 3. Shapiro-Wilk normality test (post-test–pretest differences; n = 31)

Variable/Dimension	Sig. (p)	Applied test
Total and Stage Cycle Time	0,261	t the Student
Total Dimension Score (CGPD)	0,177	t the Student
Dimensions D1–D5 and No. of Observations	< 0.05	Wilcoxon

Source: SPSS.

3.3. Testing the general hypothesis

Student's t-test for matched samples (Table 4) showed that cycle time was reduced from 52.77 to 34.29 days, with a mean difference of 18.49 days ($t = 4.528$; $df = 30$; $p < 0.001$), and that the total CGPD score increased from 4.15 to 4.90 ($t = -14.968$; $df = 30$; $p < 0.001$). At the same time, rework—measured as the number of observations per file—decreased in all 31 cases ($Z = -4.998$; $p < 0.001$). With these results, the null hypothesis is rejected and the general hypothesis is confirmed: the model significantly reduces cycle time and rework, and increases compliance with deadlines and digital traceability.

Table 4. Student's t-test for matched samples

By	Media pretest	Media postest	t (gl = 30)	Sig. (bilateral)
Cycle Time (Days)	52,77	34,29	4,528	< 0.001
Total CGPD (1–5)	4,15	4,90	−14,968	< 0.001

Source: SPSS.

3.4. Testing of specific hypotheses

The Wilcoxon test (Table 5) confirmed all four specific hypotheses. In standardization and document quality (D1), 28 of 31 municipalities improved and only 3 decreased slightly ($Z = -4.750$; $p < 0.001$); in addition, the percentage of stages with recorded time rose from 92.3 % to 100 % ($Z = -3.464$; $p < 0.001$), which validates H1. The definition of roles and deadlines (SLA) explained the reduction of cycle time and its homogenization ($t = 4.528$; $p < 0.001$), validating H2. In digitalization and interoperability (D3), 14 cases improved and 17 remained unchanged ($Z = -3.494$; $p < 0.001$), while E2E and SLA reached 100%, confirming H3. Finally, the capacities of the staff (D4) improved in the 31 cases ($Z = -4.916$; $p < 0.001$) and inter-area coordination (D5) in 29 of 31 ($Z = -4.410$; $p < 0.001$), along with the reduction of rework in all files ($Z = -4.998$; $p < 0.001$), validating H4.

Table 5. Wilcoxon test by dimension and indicator (n = 31)

Dimension/Indicator	Cases that improve	Z	Say.
D1 Standardization and document quality	28 / 31	−4,750	< 0.001
Time-logged stages	12 / 31*	−3,464	< 0.001
D2 Process flow and traceability	30 / 31	−4,813	< 0.001
D3 Digitalisation and interoperability	14 / 31	−3,494	< 0.001
D4 Staff Capabilities	31 / 31	−4,916	< 0.001
D5 Inter-area coordination	29 / 31	−4,410	< 0.001

No. of Observations (Rework)	31 / 31	−4,998	< 0.001

*Note: * the remaining 19 files already registered 100% in the pretest. Source: SPSS.*

Overall, the results show statistically significant improvements in all the indicators evaluated, with a consistent pattern: in addition to reducing the averages of time and rework, the model homogenized performance between municipalities, as reflected by the drastic drop in the standard deviation of the cycle time.

4. Discussion

The findings corroborate, in general terms, what has been anticipated by the literature: implementing a document process management model reduces cycle time and rework, and increases compliance with deadlines and digital traceability. The reduction in cycle time (35%) coincides with what was reported by Giraldo (2024) in municipalities of Metropolitan Lima (up to 40%) and is in the range of international experiences of integrated document management systems that the OECD (2023) estimates to be over 30%. The difference with respect to Giraldo (2024) is explained by the fact that this study focused on the digitization of the file, while the model proposed here combines digitization with definition of roles and deadlines (SLA). Both results support the approach of Hammer and Champy (2005): redesigning the process from its roots, eliminating redundant steps, produces measurable and sustained effects on time. This logic is consistent with the evidence of reengineering and GMP in public administrations (Gulledge & Sommer, 2002; Rinaldi et al., 2015) and with time reductions of more than 60% obtained by digitizing correspondence with real-time tracking (Kisworo, 2026).

One result that deserves attention is the fall of the standard deviation of the cycle time from 22.69 to 1.13 days. The model not only reduced the average, but also made the duration of the process predictable: before, one municipality could resolve a file in a few days and another could take almost three months; After that, almost all of them end up in a very narrow range. This standardisation has a relevant practical value, as it allows citizens and civil servants to estimate exactly when a case will be resolved.

Regarding the rework, the result was resounding: the 31 municipalities, without exception, ended up with fewer observations. This finding dialogues with Huamán and Medina (2022), who identified the dispersion of formats and the lack of operational manuals as recurrent causes of delays. By standardizing the documentation from the D1 dimension—which has also improved significantly—the model attacks that root cause. Comparative evidence in local governments points in the same direction: administrative simplification is associated with better document management practices (Aguado-Riveros et al., 2026) and process redesign reduces operational non-conformities (Rinaldi et al., 2015).

Compliance with deadlines (SLA) and E2E procedures reached 100%, in line with Arteaga et al. (2025), who reported improvements in budget execution of up to 20% when applying models based on documentary processes. The underlying logic is the same: when a process is standardized and assigned clear responsibilities and times, the institutional response capacity improves measurably. That a sample of 31 Peruvian municipalities is close to the standards of countries such as Estonia or Denmark (OECD, 2023; Pappel et al., 2018) suggests that, at this scale, it is possible to converge towards consolidated levels of document management in more advanced administrations.

However, three of the five dimensions of the CGPD (D2, D3 and D4) showed values very close to the maximum of the scale in the post-test, which configures a ceiling effect. Although it reflects an almost unanimous perception of improvement, this effect limits the instrument's ability to detect future variations, coinciding with Villalobos and Linarez's (2023) warning about the risk of a false impression of absolute success when the instrument reaches its limit. For subsequent evaluations, it would be advisable to expand the scale or incorporate more demanding reagents. These nuances are also consistent with the literature on critical success factors of BPM in the public sector, which underscores the importance of leadership, culture, and staff capabilities to sustain improvements (Syed et al., 2018; Temba, 2025).

Finally, it is necessary to recognize the limitations. The design is pre-experimental and lacks a control group, so it is not possible to guarantee with absolute certainty that the improvements are due only to the model and not to external factors that occurred during 2025, such as regulatory modifications by the MEF or the ministry analyzed. In addition, although the sample of 31 municipalities is sufficient for this analysis, it cannot be extended to all local governments in the country; the heterogeneity between rural and urban areas in technological access and technical capacity (Zela et al., 2024; Gavelán et al., 2025) allows us to anticipate that, by replicating the model in entities with less installed capacity, the results could be less homogeneous.

5. Conclusions

The implementation of the document process management model significantly reduced the total cycle time of the procedure, from 52.77 to 34.29 days ($t = 4.528$; $df = 30$; $p < 0.001$), and decreased rework in all 31 files evaluated ($Z = -4.998$; $p < 0.001$), confirming the general hypothesis.

Document standardization (D1) significantly increased the percentage of complete files in first review ($Z = -4.750$; $p < 0.001$) and that of stages with recorded time, from 92.3 % to 100 % ($Z = -3.464$; $p < 0.001$), validating H1. The definition of roles and deadlines (SLA) explained the reduction of cycle time and made it more homogeneous between municipalities, by reducing its standard deviation from 22.69 to 1.13 days, supporting H2.

Traceability and digital interoperability increased end-to-end procedures from 48.4% to 100% and compliance with deadlines from 41.9% to 100%, with a significant improvement in the D3 dimension ($Z = -3.494$; $p < 0.001$), confirming H3. Staff training and inter-area coordination improved the D4 and D5 dimensions ($Z = -4.916$ and $Z = -4.410$; $p < 0.001$) and reduced iterations per file, validating H4.

Overall, the evidence from the 31 municipalities supports the document process management model as a feasible strategy to optimize efficiency in meeting additional demands for budgetary resources in Peruvian local governments. However, its effects cannot be immediately extrapolated to all municipalities in the country, given the administrative and technological heterogeneity documented in the literature, and its measurement instrument reached a ceiling effect that should be corrected in future evaluations.

5.1. Recommendations

It is recommended that municipalities institutionalize the model by resolution or directive, so that its use does not depend on the will of a specific official. Planning and budget offices should prioritize the Roles and Deadlines Matrix (SLA) as the first step in any document improvement, as it is the dimension with the greatest effect on cycle time, before investing in expensive technology platforms. IT teams are suggested to strengthen digital interoperability (D3), the dimension with the fewest cases of complete improvement (14 out of 31), which still represents a bottleneck. Human resources areas are recommended to maintain continuous training programs (D4 improved in 100% of cases). Researchers should replicate the study with a larger sample and, if possible, with a control group, discriminating by type of municipality (urban, rural, border). Finally, senior management is suggested to establish a dashboard of indicators (KPIs) for permanent monitoring of cycle time, observations per file, compliance with deadlines and the percentage of E2E procedures, to sustain the results over time.

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