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Original Research Article

Digital Contract Lifecycle Management for Improving Procurement Efficiency and Contract Compliance in Saudi Arabian Organizations

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Abstract: Procurement organizations frequently depend on contractual information that is distributed across tender records, negotiated documents, approval messages and operational systems. Digitizing those documents can improve access while leaving responsibility for obligations and changes unresolved. This paper develops an integrative framework explaining how digital contract lifecycle management can support procurement efficiency and contract compliance in Saudi Arabian organizations. A targeted review connects digital procurement, information systems, data governance, interorganizational contracting and legal language-processing research. The synthesis identifies five mechanisms: reliable contract data, controlled transitions between lifecycle stages, traceable links with procurement transactions, accountable monitoring of obligations and feedback from performance evidence. Three matrices translate these mechanisms into implementation requirements, indicators and validation activities. Two original conceptual diagrams distinguish system architecture from the proposed relationships requiring empirical testing. Efficiency is defined through comparable processing effort, waiting and rework; compliance is assessed through evidence against specified obligations and authorized procedures. The framework predicts conditional benefits rather than automatic improvements from software adoption. Organizational readiness, supplier participation, information quality and appropriate human review shape the proposed relationships. No survey, company audit or measured performance improvement is reported. The contribution is a practical explanation of how contractual text can become accountable operational information without confusing automated processing with verified fulfillment.

Keywords: Digital Contract Lifecycle Management, Procurement Efficiency, Contract Compliance, Data Governance, Workflow Automation, Saudi Arabia.

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1. INTRODUCTION

Procurement decisions create obligations that extend well beyond supplier selection and contract signature. Payment conditions, service commitments, renewal notices and variation procedures must remain accessible to the people administering delivery. When those obligations are dispersed across disconnected files, employees may reconstruct the contractual position repeatedly. The resulting information burden can delay decisions and weaken accountability. Digital contract lifecycle management addresses this coordination problem by connecting documents, structured data, workflow actions and operational evidence throughout a commercial relationship.

Digital contract lifecycle management, abbreviated here as digital CLM, refers to the governed use of digital systems across contract request, drafting, negotiation, approval, execution, administration, amendment and closure. This definition includes process ownership and information controls alongside software. A searchable repository is one component, but does not by itself establish whether a notice was issued, a deliverable accepted or an amendment authorized. The distinction matters because technology investment can improve document visibility without changing the reliability of contractual decisions.

Saudi Arabia provides a relevant setting for investigating these mechanisms. The Digital Government Authority's Digital Transformation Measurement 2024 describes a structured assessment of government agencies against digital transformation standards (DGA, 2025). Its scope is governmental, so its findings should not be used as private-sector CLM adoption statistics. The publication nevertheless illustrates a domestic policy emphasis on documented digital capability. This paper examines organizational mechanisms across procurement settings without assuming uniform systems, governance requirements or implementation maturity.

1.1 Aim and Research Questions

The aim is to develop a framework explaining how digital CLM can support procurement efficiency and contract compliance in Saudi Arabian organizations. Five objectives guide the analysis: distinguish document digitization from lifecycle integration; identify the data and workflow requirements supporting reliable administration; explain links between contracts and procurement transactions; develop indicators with explicit interpretation limits; and propose an implementation and research approach appropriate for testing the framework. The study does not evaluate a named organization or a particular software product.

Three research questions follow. Which mechanisms connect digital CLM capabilities with procurement efficiency and contract compliance? Which organizational and information conditions shape those relationships? How can organizations assess benefits without confusing faster processing, system use or missing records with improved contractual outcomes? Addressing these questions requires evidence from several research traditions because CLM combines information management, commercial governance, user behavior and operational coordination.

2. LITERATURE REVIEW

2.1 Digital Transformation and Procurement Capability

Vial (2019) treats digital transformation as a process involving technological change, organizational responses and associated barriers. Verhoef *et al*., (2021) distinguish digitization, digitalization and broader transformation. Applied to contracts, scanning a document, automating a review route and redesigning cross-functional administration represent different changes. These distinctions discourage evaluating a CLM initiative solely by the volume of files migrated. The analytical question is which operational capability changes and whether that capability improves an identifiable decision or outcome.

Srai and Lorentz (2019) connect procurement digitalization with value drivers rather than technology selection alone. Bienhaus and Haddud (2018) examine benefits and barriers in procurement digitization, while Herold *et al.*, (2023) synthesize capabilities needed for digital procurement transformation. Together, these sources support a capability-based approach: organizations must define requirements, manage change and integrate information before expecting operational value. Their findings address broader procurement digitalization, so they do not establish an independent causal effect for every CLM feature.

2.2 Information Systems Success and User Participation

DeLone and McLean (2003) provide a framework connecting information-system quality, use and benefits. Davis (1989) identifies perceived usefulness and ease of use as relevant to technology acceptance; Venkatesh *et al*., (2003) develop a broader acceptance framework. These contributions suggest that a technically available CLM platform may deliver limited value if users find its tasks burdensome or unrelated to their work. User activity must therefore be examined alongside information quality and the decisions the system supports.

Supplier participation introduces an additional boundary. Kosmol *et al*., (2019) emphasize digital readiness on both sides of procurement relationships. A buyer can impose a portal while suppliers continue submitting inconsistent records through other channels. Hallikas *et al*., (2021) associate digital procurement and analytics capabilities with supply-chain performance, and Jahani *et al.,* (2021) review technological applications across procurement processes. The proposed CLM application is conditional: data interfaces, usable participation routes and accountability are necessary design considerations, not outcomes established merely by installing technology.

2.3 Data Quality and Governance

Wang and Strong (1996) explain why data quality extends beyond accuracy to fitness for the user's task. For contract administration, an accurate expiry date remains inadequate if users cannot identify the notice period, amendment history or responsible owner. Khatri and Brown (2010) examine data governance through decision rights and accountability. These perspectives support distinguishing who enters contractual data from who is authorized to verify its meaning. Data capture and authoritative interpretation require connected but different responsibilities.

Otto (2011) shows that data-governance arrangements can vary with organizational context. A central contracts function might maintain a common data dictionary while service owners verify operational obligations. Another organization might distribute stewardship across business units. The framework therefore specifies required responsibilities rather than prescribing one organizational chart. Its central requirement is an accountable method for resolving inconsistencies, including conflicts between a structured field and the executed contractual text that the field is intended to represent.

2.4 Contract Governance and Operational Meaning

Schepker *et al*., (2014) extend discussion of contracts beyond safeguarding to coordination and adaptation. Poppo and Zenger (2002) examine relationships between formal contracts and relational governance; Cao and Lumineau (2015) synthesize evidence of their interplay. These studies support designing digital CLM around the activities governed by an agreement. A clause library can promote consistency, but the system must also preserve how responsibilities change when requirements, assumptions or delivery conditions are modified.

Lumineau (2017) distinguishes controlling and coordinating contractual dimensions when examining trust and distrust. Digital monitoring should consequently support explanation and resolution as well as detection. A dashboard flag is a prompt for investigation, not a complete commercial judgment. The OECD (2023) provides a broader governance reference concerning accountability and oversight. These sources inform the framework's emphasis on clear responsibility and review, while the particular authority structure remains an organizational choice governed by applicable requirements.

2.5 Automated Contract Analysis

Legal language-processing research demonstrates both opportunities and limitations. Chalkidis *et al*., (2017) investigate automated extraction of contract elements. Hendrycks *et al*., (2021) introduce CUAD, an expert-annotated dataset for identifying contract passages requiring review. Koreeda and Manning (2021) develop ContractNLI, where systems assess whether contract text supports, contradicts or does not mention specified statements. These studies concern distinct analytical tasks. Success on one task should not be interpreted as general competence in contractual interpretation or operational compliance assessment.

Automated extraction can assist migration or review by proposing fields and relevant passages. Verification remains necessary because obligations can depend on exceptions, cross-references, conditions and amendments. The cited benchmark research does not establish performance for Arabic or bilingual Saudi procurement agreements. Organizations should evaluate any proposed model against representative local documents and predefined tasks. This distinction prevents technical benchmark results from being transformed into unsupported claims about legal reliability, procurement savings or autonomous decision-making.

3. RESEARCH METHODOLOGY

3.1 Review Design

The study uses a targeted integrative review and conceptual analysis. Snyder (2019) discusses matching review design to its purpose, and Torraco (2005) explains integrative synthesis as a basis for developing new understanding. This approach connects evidence from procurement, information systems and contracting without implying that they measure identical constructs. It is appropriate for specifying mechanisms and testable relationships. It does not support a pooled estimate of CLM's financial or compliance effects.

3.2 Source Identification and Selection

Targeted web searches used combinations of digital procurement, contract lifecycle management, contract information extraction, data governance, information systems success, user acceptance and contractual governance. Publisher pages, conference proceedings, institutional repositories and official Saudi publications were consulted. Inclusion required a clear relationship to a framework mechanism or its boundary conditions. The review did not involve a direct exhaustive search of subscription databases, and no comprehensive Scopus or Web of Science screening claim is made.

The reference set contains 25 sources spanning peer-reviewed journal articles, peer-reviewed conference research and official institutional publications. Foundational studies were retained where they defined information quality, acceptance or governance concepts. More recent procurement and contract-analysis studies inform digital capabilities. Software marketing claims and unattributed savings percentages were excluded from the evidence base. Official Saudi material supplies context rather than estimates of commercial CLM prevalence. Publication type and relevance were considered separately so that policy documents were not treated as empirical firm-level research.

3.3 Appraisal and Synthesis

Appraisal considered source provenance, research purpose, empirical or conceptual status and applicability to procurement contracts. Findings visible only through abstracts or publisher summaries were used for broad claims rather than detailed methodological interpretation. Evidence was grouped into information quality, workflow control, integration, participation, obligation monitoring and outcome evaluation. The synthesis then identified information handovers where each capability could influence administration. Tables and figures are original proposals derived from this analysis, not reproduced instruments or validated maturity scales.

3.4 Evidence Boundaries

No organizational dataset, interviews, system logs or contract-file audit underpin this manuscript. Results therefore describe analytical findings and proposed relationships rather than measured effects. No article-screening flow count or quantitative quality score was manufactured. The principal limitations are targeted source selection, uneven full-text access and transfer of findings between sectors and national settings. The framework should be tested against actual contract records and user experiences before being used to claim organizational improvement.

4. RESULTS AND DISCUSSION

4.1 Defining the Contract Information Architecture

The first analytical finding is that digital CLM requires both an authoritative document record and a usable representation of obligations. The document record preserves executed agreements, schedules and amendments. Structured fields support searching, reporting and workflow actions. An obligation record adds responsibility, triggering conditions, due dates and evidence requirements. These layers should be connected without treating a simplified field as a replacement for the complete contract. Figure 1 proposes an architecture linking those layers with procurement and operational records.

A consistent contract identifier is central to that connection. Supplier identity, purchasing category, business owner and effective dates should be defined using controlled records. Obligations should link to the contractual passage supporting them and to the relevant version. The proposed design makes disagreements visible: an unresolved field can be flagged for verification instead of silently becoming authoritative. Table 1 summarizes lifecycle controls. Its requirements are a design proposal and do not describe an existing organization's system.

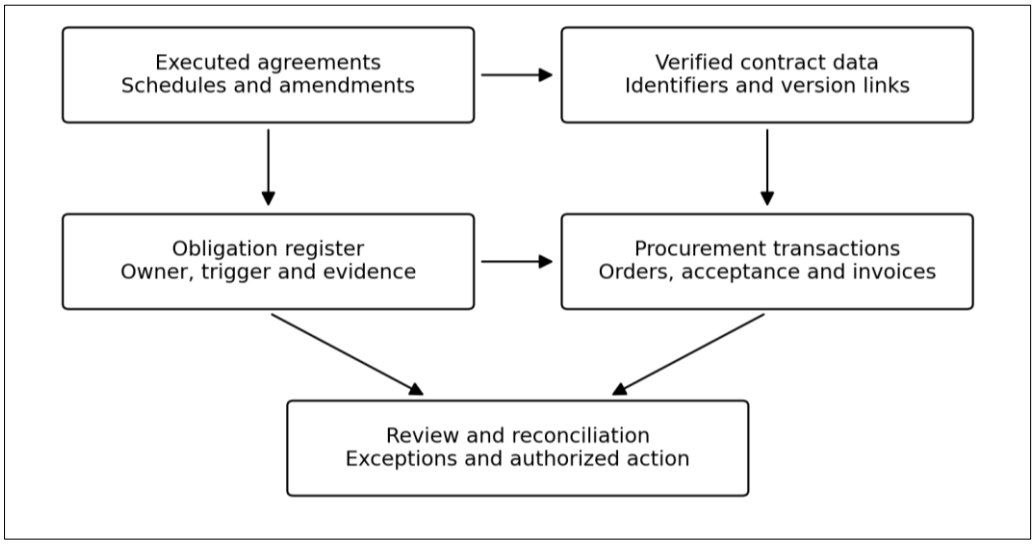


Figure 1: Proposed contract information architecture
Source: original conceptual synthesis. Arrows show proposed information links and review inputs, not observed system integrations.

Table 1: Proposed digital controls across the contract lifecycle

Stage	Digital control	Required evidence
Request and drafting	Staged completeness; controlled versions	Scope, owner and material deviations
Approval and execution	Version-specific authority and activation	Approved terms and complete executed record
Administration	Obligations linked to responsible owners	Acceptance, notices and reporting records
Amendment	Effective dates and retained history	Authorized changes and updated obligations
Renewal and closure	Early review and unresolved-duty checks	Decision rationale and closure evidence

Source: author synthesis. Proposed controls and indicators require organizational validation.

4.2 Capturing Requests and Controlling Drafts

A digital request should establish the business need, scope, expected commitment and review responsibilities. Mandatory fields need a clear purpose. Requiring information unavailable at initiation can create false entries or informal workarounds. A practical process distinguishes fields needed to open a request from those needed to approve or execute it. This staged completeness approach preserves control while recognizing that contract details develop through negotiation. The system should expose missing information and identify who must resolve it.

Draft controls should preserve the source template, document version and proposed deviations. Authorized templates can reduce repeated work, but users still need a route for unusual requirements. Version comparison should identify material changes without assuming that every text edit has equal commercial significance. A review record should explain the accepted deviation and any conditions attached to approval. This allows later administrators to understand the final arrangement without reconstructing its negotiation from unrelated messages.

4.3 Making Approval Workflows Informative

Workflow automation can route requests consistently, yet routing logic must reflect actual authority. Financial commitments, nonstandard terms and operational risk may require different reviewers. The system should distinguish an advisory comment from an approval and record which version was approved. Delegation during absence needs defined limits and an expiry mechanism. Otherwise, a digital process may create the appearance of control while decisions continue to depend on unclear or outdated authority.

Efficiency assessment should separate elapsed waiting from active review and repeated submission. Long delays may originate in incomplete requests, unresolved business decisions or an unavailable reviewer. Accelerating notifications will not resolve all three causes. A reason-coded return process can show why work is repeated. Review complexity should also be recorded so that simple renewals are not compared indiscriminately with novel agreements. The objective is an informed and traceable decision, with processing time interpreted in relation to its purpose.

4.4 Verifying Execution and Handover

The transition to an active contract should require confirmation that the executed document matches the approved version and that relevant schedules are included. The appropriate signing method and signatory authority require verification for the specific organization and transaction. This paper does not prescribe a universal legal rule for electronic execution. From an information perspective, the important control is a record that connects approval, executed content and activation, while preserving any unresolved conditions.

At handover, the operating owner should accept responsibility for the obligations relevant to delivery. A short commencement review can confirm milestones, reporting, invoice evidence and escalation contacts. Contract managers should distinguish obligations they administer from specialist decisions requiring legal, technical or financial review. Digital assignment makes responsibility visible, but it does not establish that the assignee understands or can perform the task. Handover completion should therefore involve acknowledgment and access to usable supporting information.

4.5 Linking Obligations to Procurement Transactions

The second analytical finding is that compliance monitoring becomes more useful when contract requirements connect with transaction evidence. A purchase order may reference a valid agreement while applying an obsolete price schedule. Conversely, a payment outside the expected pattern may be authorized by a later amendment. Digital CLM should make the relationship between contract,

order, acceptance and invoice inspectable. This connection supports investigation; it does not imply that every transaction can be approved automatically.

Integration requires agreement on identifiers, status definitions and responsibility for exceptions. Supplier records may differ across finance and procurement systems, while one agreement can cover several service locations. Mapping must preserve those relationships rather than forcing them into a misleading one-to-one structure. Failed interface messages should be visible and assigned for resolution. Reconciliation should test whether transferred data remain complete and current, especially after amendments that affect commercial terms or delivery responsibility.

4.6 Monitoring Obligations without Misclassifying Performance

An obligation register should identify the required action, responsible party, timing rule and acceptable evidence. Some duties recur on a fixed schedule; others arise only when a specified event occurs. A system that stores only static dates can mishandle conditional obligations. Administrators should therefore define how triggering events are recognized and confirmed. The register should also distinguish a supplier action from a buyer dependency, avoiding automatic attribution of every missed date to one party.

Status categories should separate completed, overdue, not yet due, disputed and awaiting evidence. Missing documentation is an information exception; it may indicate a substantive problem, but it is not conclusive proof of nonperformance. Similarly, uploading evidence does not establish that the underlying deliverable meets contractual requirements. A reviewer must assess its relevance and sufficiency. These distinctions protect measurement quality and support proportionate escalation instead of encouraging a dashboard that reports certainty unsupported by the available record.

4.7 Managing Amendments and Renewal Decisions

Amendments should preserve the relationship between original obligations and revised requirements. A structured change record needs scope, commercial effect, authority, effective date and supporting documents. Updating a field without retaining the prior position destroys the audit trail needed to explain transactions over time. Version-specific reporting is particularly important when an amendment operates prospectively while earlier invoices remain governed by the original arrangement. The system should allow an administrator to reconstruct the position applicable at the date under review.

Renewal reminders should initiate evaluation early enough for an informed choice. The required lead time depends on contractual notice provisions, sourcing alternatives and operational dependency. A reminder issued shortly before expiry may be technically correct but commercially unhelpful. Renewal review should compare delivered outcomes, unresolved obligations, market alternatives and the consequences of transition. Automatic reminders support this decision; automatic continuation should occur only within a specifically authorized arrangement whose assumptions and requirements remain understood.

4.8 Maintaining Data Quality and Appropriate Access

Data stewardship should assign accountability for completeness, validation and correction. High-impact fields deserve stronger verification than low-risk descriptive tags. Migration should begin with an inventory and a sample review of executed documents, amendments and duplicates. Imported records with unresolved meaning should retain that status until checked. A clean interface can conceal poor underlying information, so the migration acceptance decision should consider sampled accuracy and completeness rather than the number of documents uploaded.

Access controls should reflect the information needed for a role and the sensitivity of its contents. Contract administration may involve personal information, confidential pricing and commercially sensitive obligations. Organizations must assess applicable requirements for access, retention, hosting and external processing in their own setting. This manuscript does not offer legal compliance certification. The proposed design includes periodic permission review, documented retention decisions, recovery testing and a defined route for obtaining records when a user changes role or leaves.

4.9 Evaluating Automated Analysis

Automated extraction can propose dates, parties, clause categories or potential deviations for human checking. Its value depends on the task and the consequences of error. A missed termination provision may matter differently from an incorrect descriptive tag. Evaluation should therefore report task-specific precision, recall and review effort where suitable, alongside the commercial significance of mistakes. A single overall accuracy figure would conceal variation between document types, languages and obligation categories.

Testing should use a separate set of representative contracts and expert-verified annotations. Documents used to configure a model should not be reused as the sole evidence of its performance. The organization should examine exceptions, poor-quality scans, cross-references and amended clauses. Human reviewers need access to the supporting passage and an easy way to correct or reject a proposed field. Such controls follow from the distinction between identifying contractual text and deciding what action it requires in a particular situation.

4.10 Measuring Efficiency and Compliance Together

Table 2 proposes measures that evaluate process quality and contractual administration together. Processing speed should be assessed alongside first-pass completeness, material rework and decision quality. Compliance indicators require a clear denominator: obligations due during a defined period differ from all obligations held in a repository. Changes in contract complexity or record coverage can alter reported performance without any change in underlying conduct. Baselines should therefore be segmented by category, workflow type and implementation stage.

Economic evaluation should include configuration, integration, migration, training, support and continuing stewardship. Reduced processing effort is a potential benefit, but translating it into cash savings requires evidence that resources are redeployed or costs actually avoided. Faster completion also has different value depending on whether it advances a time-sensitive business activity. The analysis should identify these assumptions explicitly rather than multiplying every saved minute by a standard rate and treating the result as realized financial return.

Table 2: Proposed efficiency and compliance indicators

Indicator	Definition	Interpretation limit
Processing time	Complete submission to authorized decision	Separate waiting, active review and rework
First-pass completeness	Requests accepted without return / requests reviewed	Apply a consistent completeness rule
Obligation evidence coverage	Due obligations with verified evidence / due obligations	Missing evidence is not confirmed failure
Amendment traceability	Changes linked to authority and effective version / changes reviewed	Test substance as well as field presence
Exception resolution	Exceptions resolved with evidence / exceptions due for resolution	Distinguish closure from justified resolution
Realized effort benefit	Comparable handling effort before and after implementation	Include stewardship and implementation costs

Source: author synthesis. Proposed controls and indicators require organizational validation.

4.11 Proposed Framework and Research Propositions

Figure 2 separates enabling conditions, operational mechanisms and proposed outcomes. The first proposition is that information quality strengthens the relationship between digital CLM use and reliable obligation monitoring. The second is that integration with transaction records supports efficiency through reduced reconciliation effort, conditional on consistent identifiers and exception handling. The third is that user and supplier readiness strengthen workflow participation. The fourth is that clear ownership improves the conversion of alerts into verified action. These are propositions for testing, not findings from an organizational sample.

The framework also predicts trade-offs. More checks can reduce errors while increasing processing time; a simplified workflow can improve participation while omitting necessary review. Performance therefore depends on the fit between control intensity and exposure. Possible confounders include management capability, existing process discipline, supplier quality and contract complexity. Organizations with these advantages may both adopt CLM more effectively and achieve better outcomes. A credible evaluation must examine those alternatives before attributing change to the digital system.

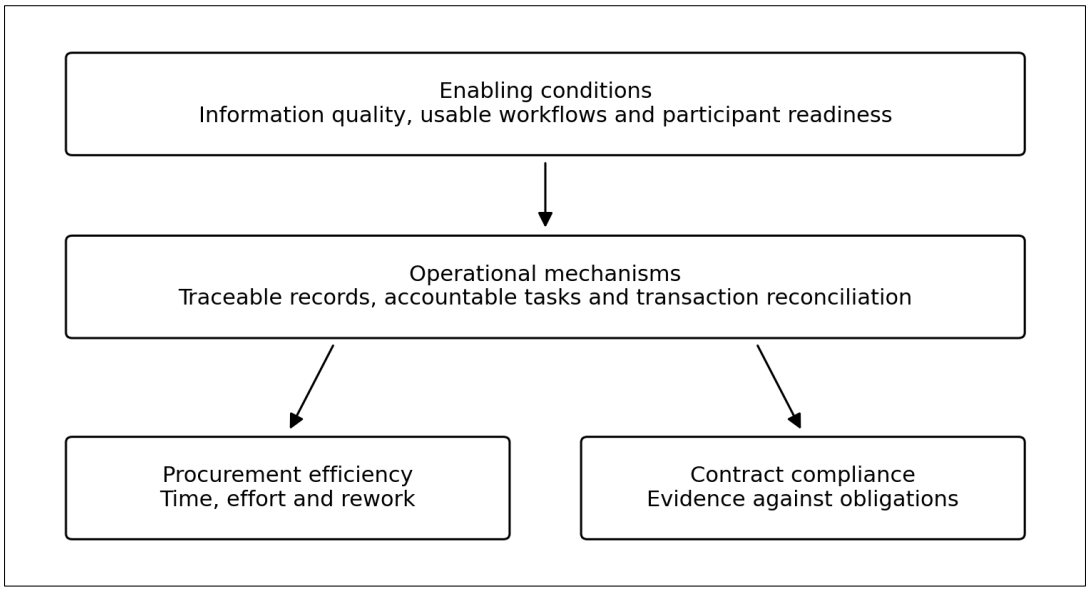


Figure 2: Proposed pathways from digital CLM to organizational outcomes

Source: original conceptual synthesis. Relationships are propositions for empirical testing; no causal effects are estimated.

5. CONCLUSION AND RECOMMENDATIONS

Digital CLM can be understood as an information and accountability capability connecting contract formation with administration. The review indicates that software features are only part of this capability. Reliable data, version-specific authority, practical ownership and links to delivery evidence explain how digital processes might support efficiency and compliance. The principal contribution is a mechanism-based framework that distinguishes document availability from verified contractual action. Its application to Saudi Arabian organizations remains a research proposition requiring direct evidence.

Implementation should begin with a bounded category and a documented baseline. Procurement, contracts, operations, finance and information-technology personnel should agree the minimum dataset, ownership structure and required interfaces. A pilot should verify both migrated information and actual task completion before expansion. Table 3 proposes implementation activities and acceptance evidence. Progress should depend on demonstrated usability and control quality, rather than the assumption that broader automation always represents greater organizational maturity.

Training should use realistic tasks such as identifying an amended price schedule, assigning a conditional obligation or correcting an inaccurate extracted date. Support should capture recurring difficulties and feed them into configuration changes. Suppliers should receive a practical participation route proportionate to their capabilities. Governance reviews should examine whether employees use informal channels because of convenience, unclear responsibilities or genuine system limitations. These observations are essential for improving the process rather than merely reporting adoption levels.

Table 3: Proposed implementation activities and acceptance evidence

Activity	Responsible functions	Acceptance evidence
Define pilot and baseline	Procurement and contract owners	Comparable scope, workload and measures
Verify migrated records	Contracts and data stewards	Sampled field accuracy and amendment links
Test workflows and interfaces	Process owners and technology team	Authority checks and reconciled transfers
Validate use and monitoring	Users, suppliers and service owners	Completed tasks and verified obligations
Review and scale	Cross-functional oversight group	Documented benefits, costs and unresolved risks

Source: author synthesis. Proposed controls and indicators require organizational validation.

6. Future Directions

Future research should examine Saudi organizations with different procurement categories, organizational sizes and contract languages. Multiple-case studies could trace information from request through amendment and closure, comparing system records with executed agreements and transaction evidence. Interviews with users and suppliers could explain where formal workflows diverge from working practice. Contract-file sampling should use explicit coding rules, independent review and confidentiality arrangements. Such research would test whether the proposed mechanisms are present and how they interact with organizational context.

Longitudinal evaluation could compare a pilot category with a similar category awaiting implementation, while accounting for changes in workload and complexity. Outcomes should include processing time, rework, evidence completeness and resolved exceptions rather than software activity alone. Research on automated analysis should separately test Arabic, English and bilingual contracts using appropriately annotated data. The targeted review and limited direct Saudi CLM evidence restrict this paper's generalizability. Subsequent studies should refine, reject or qualify the proposed relationships instead of treating the framework as a validated performance guarantee.

REFERENCES

- Bienhaus, F., & Haddud, A. (2018). Procurement 4.0: Factors influencing the digitisation of procurement and supply chains. Business Process Management Journal, 24(4), 965–984. https://doi.org/10.1108/BPMJ-06-2017-0139
- Cao, Z., & Lumineau, F. (2015). Revisiting the interplay between contractual and relational governance: A qualitative and meta-analytic investigation. Journal of Operations Management, 33–34, 15–42. https://doi.org/10.1016/j.jom.2014.09.009
- Chalkidis, I., Androutsopoulos, I., & Michos, A. (2017). Extracting contract elements. Proceedings of the 16th International Conference on Artificial Intelligence and Law, 19–28. https://doi.org/10.1145/3086512.3086515
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly, 13(3), 319–340. https://doi.org/10.2307/249008
- DeLone, W. H., & McLean, E. R. (2003). The DeLone and McLean model of information systems success: A ten-year update. Journal of Management Information Systems, 19(4), 9–30. https://doi.org/10.1080/07421222.2003.11045748
- Digital Government Authority (DGA). (2025). Digital Transformation Measurement 2024. https://dga.gov.sa/sites/default/files/2025-05/Digital%20Transformation%20Measurement%202024.pdf
- Hallikas, J., Immonen, M., & Brax, S. (2021). Digitalizing procurement: The impact of data analytics on supply chain performance. Supply Chain Management: An International Journal, 26(5), 629–646. https://doi.org/10.1108/SCM-05-2020-0201
- Hendrycks, D., Burns, C., Chen, A., & Ball, S. (2021). CUAD: An expert-annotated NLP dataset for legal contract review. Proceedings of the Neural Information Processing Systems Track on Datasets and Benchmarks, 1. https://datasets-benchmarks-proceedings.neurips.cc/paper_files/paper/2021/hash/6ea9ab1baa0efb9e19094440c317e21b-Abstract-round1.html
- Herold, S., Heller, J., Rozemeijer, F., & Mahr, D. (2023). Dynamic capabilities for digital procurement transformation: A systematic literature review. International Journal of Physical Distribution & Logistics Management, 53(4), 424–447. https://doi.org/10.1108/IJPDLM-12-2021-0535
- Jahani, N., Sepehri, A., Rezaei Vandchali, H., & Babaee Tirkolaee, E. (2021). Application of Industry 4.0 in the procurement processes of supply chains: A systematic literature review. Sustainability, 13(14), 7520. https://doi.org/10.3390/su13147520
- Khatri, V., & Brown, C. V. (2010). Designing data governance. Communications of the ACM, 53(1), 148–152. https://doi.org/10.1145/1629175.1629210
- Koreeda, Y., & Manning, C. (2021). ContractNLI: A dataset for document-level natural language inference for contracts. Findings of the Association for Computational Linguistics: EMNLP 2021, 1907–1919. https://doi.org/10.18653/v1/2021.findings-emnlp.164
- Kosmol, T., Reimann, F., & Kaufmann, L. (2019). You'll never walk alone: Why we need a supply chain practice view on digital procurement. Journal of Purchasing and Supply Management, 25(4), 100553. https://doi.org/10.1016/j.pursup.2019.100553
- Lumineau, F. (2017). How contracts influence trust and distrust. Journal of Management, 43(5), 1553–1577. https://doi.org/10.1177/0149206314556656
- OECD. (2023). G20/OECD principles of corporate governance 2023. OECD Publishing. https://doi.org/10.1787/ed750b30-en
- Otto, B. (2011). Organizing data governance: Findings from the telecommunications industry

and consequences for large service providers. Communications of the Association for Information Systems, 29, Article 3, 45–66. https://doi.org/10.17705/1CAIS.02903

- Poppo, L., & Zenger, T. (2002). Do formal contracts and relational governance function as substitutes or complements? Strategic Management Journal, 23(8), 707–725. https://doi.org/10.1002/smj.249
- Schepker, D. J., Oh, W.-Y., Martynov, A., & Poppo, L. (2014). The many futures of contracts: Moving beyond structure and safeguarding to coordination and adaptation. Journal of Management, 40(1), 193–225. https://doi.org/10.1177/0149206313491289
- Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. Journal of Business Research, 104, 333–339. https://doi.org/10.1016/j.jbusres.2019.07.039
- Srai, J. S., & Lorentz, H. (2019). Developing design principles for the digitalisation of purchasing and supply management. Journal of Purchasing and Supply Management, 25(1), 78–98. https://doi.org/10.1016/j.pursup.2018.07.001
- Torraco, R. J. (2005). Writing integrative literature reviews: Guidelines and examples. Human Resource Development Review, 4(3), 356–367. https://doi.org/10.1177/1534484305278283
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. MIS Quarterly, 27(3), 425–478. https://doi.org/10.2307/30036540
- Verhoef, P. C., Broekhuizen, T., Bart, Y., Bhattacharya, A., Dong, J. Q., Fabian, N., & Haenlein, M. (2021). Digital transformation: A multidisciplinary reflection and research agenda. Journal of Business Research, 122, 889–901. https://doi.org/10.1016/j.jbusres.2019.09.022
- Vial, G. (2019). Understanding digital transformation: A review and a research agenda. The Journal of Strategic Information Systems, 28(2), 118–144. https://doi.org/10.1016/j.jsis.2019.01.003
- Wang, R. Y., & Strong, D. M. (1996). Beyond accuracy: What data quality means to data consumers. Journal of Management Information Systems, 12(4), 5–33. https://doi.org/10.1080/07421222.1996.11518099.