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Research Paper

Procurement Delays and Public Service Delivery: A Systematic Review from Supply Chain and Operations Management Perspectives

Williams Kwame Boateng*
Procurement and Supply Chain Department, School of Business,
University for Development Studies, Ghana

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Abstract

Procurement delays continue to pose a significant obstacle to the efficiency of public service delivery by impacting supply chain performance and operational efficacy. Despite the extensive documentation of these delays across several industries, the current evidence is disjointed, hindering the identification of their primary causes, operational impacts, and viable mitigation approaches. This systematic study consolidates worldwide research regarding procurement delays from the viewpoints of supply chain and operations management, emphasising the ramifications for public sector entities in Ghana and other developing nations. The evaluation was performed in alignment with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) standards. A systematic literature review was conducted utilising prominent academic databases such as Scopus, Web of Science, ScienceDirect, Emerald Insight, and Google Scholar, encompassing research published from January 2003 to June 2026. Eligibility requirements encompassed peer-reviewed research in English that investigated procurement delays, public procurement, supply chain management, operations management, and the delivery of public services. Records were evaluated based on title, abstract, and comprehensive text analysis according to established inclusion and exclusion standards. The research was amalgamated through a narrative evidence synthesis method to discern prevalent themes, causal elements, operational effects, and suggested interventions. The analysis highlights legislative intricacies, protracted approval timelines, insufficient procurement strategies, supplier-related limitations, restricted digital advancement, governance shortcomings, and institutional capacity inadequacies as the predominant factors contributing to procurement delays. These obstacles result in prolonged procurement timelines, interruptions in the supply chain, heightened operational expenses, delays in project execution, and diminished quality and availability of public services. The data additionally illustrates that cohesive procurement management strategies, electronic procurement systems, reforms in procurement governance, management of supplier relationships, and enhancement of workforce capabilities markedly enhance procurement efficiency and supply chain effectiveness. This analysis enhances the literature on supply chain and operations management by offering a cohesive synthesis of the factors influencing procurement delays and their effects on public sector efficacy. The results provide actionable insights for policymakers, procurement professionals, and public administrators seeking to strengthen procurement frameworks, enhance operational efficiency, and elevate public service delivery, especially in developing nations like Ghana.

Keywords: *Public Procurement, Supply Chain Performance, Operations Management, Public Sector Supply Chains, Public Service Delivery*

INTRODUCTION

Public procurement constitutes a critical operational function within government institutions, representing a considerable portion of public expenditure and serving as the principal means by which public organisations obtain goods, works, and services essential for efficient service delivery (Smith & Brown, 2018). In addition to assuring adherence to statutory standards, procurement operations directly impact supply chain performance, resource availability, operational efficiency, and the prompt execution of public programs (Ottou et al. 2020).

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Procurement performance has emerged as a critical research domain within supply chain and operations management, as procurement decisions significantly influence the efficacy of downstream operational processes across various sectors, including healthcare, education, infrastructure, transportation, and local government (Anane et al. 2019; Kimani & Wanjiru, 2020). Public procurement serves as a strategic mechanism that allows governments to get the necessary commodities, works, and services for the provision of vital public services. In Ghana, public procurement constitutes a significant portion of government spending and is crucial in bolstering healthcare, education, infrastructure, sanitation, and various public sector initiatives. The efficacy of procurement procedures consequently affects the quality, promptness, and availability of public service provision. Although procurement systems aim to enhance transparency, accountability, and cost-effectiveness, ongoing delays in procurement procedures hinder public institutions from realising these goals (Anane et al., 2019).

Procurement delays in Ghana occur at several phases of the procurement cycle, such as planning, approval procedures, tender assessment, contract allocation, supplier efficacy, and payment management (Ottou et al., 2020). Such delays frequently prolong project timelines, escalate procurement expenses, hinder the prompt delivery of products and services, and diminish the operational efficiency of public entities. As a result, procurement inefficiencies impact both organisational efficacy and citizens' access to vital public services (Kotey & Nani, 2015; Ottou et al., 2020). Considering the critical role of procurement in public sector functions, comprehending the factors and repercussions of these delays is a substantial issue for policy and management.

Current research has investigated procurement difficulties in particular sectors and organisations in Ghana, highlighting issues like administrative inefficiencies, burdens of regulatory compliance, insufficient procurement planning, restricted institutional capacity, financial limitations, and ineffective supplier management (Kotey & Nani, 2015; Ottou et al., 2020). While these investigations yield significant insights, their conclusions are scattered across many sectors and research environments. Consequently, there exists scant unified information elucidating how procurement delays cumulatively impact public service delivery or delineating the operational processes by which these effects manifest throughout Ghana's public sector (Kimani & Wanjiru, 2020; Li & Zhang, 2019; Ottou et al. 2020).

From the standpoint of supply chain and operations management, delays in procurement signify interruptions that impact the synchronisation of procurement processes, supplier interactions, inventory accessibility, project implementation, and service delivery efficacy (Sienkiewicz-Małyjurek & Szymczak, 2023). Supply chain management prioritises the effective movement of resources, information, and finances among interconnected entities, whereas operations management aims to enhance process efficiency, resource allocation, and organisational effectiveness. Utilising these viewpoints establishes an organised framework for comprehending procurement delays as systemic operational issues rather than singular administrative concerns, thus providing insights into enhancing procurement efficacy inside Ghana's public sector.

Notwithstanding the growing body of research on public procurement in Ghana, a thorough systematic study has yet to consolidate the existing information about procurement delays and their effects on public service delivery from the integrated perspective of supply chain and operations management (Ottou et al., 2020). The lack of this synthesis constrains policymakers, procurement professionals, and academics from recognising consistent factors, persistent operational issues, evidence deficiencies, and successful enhancement solutions within the current knowledge base (Thai, 2009; Basheka and Bisangabasaija, 2010; Ameyaw et al. 2012).

This research fills the void by performing a thorough examination of the literature concerning procurement delays and public service provision in Ghana. The assessment consolidates empirical data regarding the primary factors contributing to procurement delays,

assesses their effects on public service provision, evaluates insights from supply chain and operations management viewpoints, and delineates goals for next research and policy. This review synthesises disparate facts to furnish a cohesive comprehension of procurement delays in Ghana, while also presenting pragmatic recommendations for enhancing procurement methods and optimising public service delivery.

LITERATURE REVIEW

Investigations into procurement delays have significantly increased in the last twenty years; however, the findings are still disjointed across many nations, industries, and academic disciplines. Research from emerging economies often highlights procurement inefficiencies as a significant factor in inadequate public service delivery; however, the precise mechanisms by which delays occur vary based on institutional contexts, governance structures, and supply chain attributes. Procurement delays are increasingly perceived not merely as isolated administrative shortcomings but as systemic operational issues arising from the interplay of procurement processes, organisational competencies, supplier marketplaces, and regulatory frameworks (Sienkiewicz-Małyjurek & Szymczak, 2024).

In public sector environments, procurement holdups are invariably linked to protracted approval processes, excessive red tape, inadequate procurement strategies, and disjointed decision-making. Nonetheless, comparative data indicates that these elements seldom function in isolation. In tightly controlled procurement settings, rigorous compliance mandates enhance accountability yet often prolong administrative timelines (Sienkiewicz-Małyjurek & Szymczak, 2024; Asare et al., 2025). In contrast, procurement systems that offer enhanced administrative flexibility typically undergo abbreviated procurement processes, although encounter increased risks of opportunistic conduct and governance breakdowns. This suggests that the efficacy of procurement is influenced by both the presence of procurement legislation and the manner in which governance structures reconcile accountability with operational efficiency (Sienkiewicz-Małyjurek & Szymczak, 2024; Asare et al., 2025).

Sectoral analyses further illustrate that procurement delays provide varying operational repercussions contingent upon the type of public services. In healthcare systems, postponed procurement chiefly hinders the availability of medications, emergency interventions, and patient treatment. Infrastructure initiatives encounter cost inflation, project delays, and contractor disputes, whilst educational sectors indicate postponed provision of instructional resources and infrastructure development. Despite the variation in operational results, the fundamental procurement issues display striking resemblances, including insufficient procurement planning, poor supplier collaboration, postponed approvals, and subpar contract administration. The persistent trends indicate that procurement delays mostly stem from supply chain coordination challenges instead of being merely administrative problems within certain sectors (Heinis et al., 2022; Sienkiewicz-Małyjurek & Szymczak, 2024).

Cross-national evidence additionally uncovers significant institutional disparities. Research from advanced procurement frameworks increasingly highlights digital procurement platforms, cohesive supply chain management, and collaborative supplier partnerships as strategies for minimising procurement cycle durations. Conversely, studies from numerous developing nations, such as Ghana and various Sub-Saharan African countries, consistently highlight institutional fragmentation, political meddling, inadequate technical expertise, and financial limitations as primary causes of procurement delays. Nonetheless, these investigations together illustrate that procurement efficacy is contingent upon the interplay between institutional governance and operational competencies, rather than on each element independently (Opoku-Mensah et al., 2023; Sienkiewicz-Małyjurek & Szymczak, 2024).

Supplier-related difficulties exhibit notable uniformity across procurement environments. Supplier non-performance, insufficient competition, tardy delivery, and contractual disagreements are commonly noted; yet, current studies on supply chains suggest that supplier conduct typically mirrors deficiencies within the procurement framework. Ineffective procurement planning, impractical specifications, tardy payments, and inadequate contract management diminish supplier responsiveness and prolong procurement lead times. Thus, procurement delays must to be perceived as interconnected supply chain issues that encompass both public entities and supplier networks, rather than being only ascribed to suppliers (Heinis et al., 2022; Sienkiewicz-Małyjurek & Szymczak, 2024).

Resource limitations represent another prevalent motif throughout the literature, albeit their impacts transcend mere financial restraints. Deficiencies in human resources, procurement acumen, information systems, and technological infrastructure combine diminish procurement efficiency by prolonging processes durations, restricting market insights, and hindering effective procurement strategy. Recent studies thus perceive organisational resources as strategic assets that affect procurement agility, supplier collaboration, and operational efficacy instead of simply administrative components (Sienkiewicz-Małyjurek & Szymczak, 2024).

Notwithstanding the expanding corpus of information, earlier evaluations have predominantly focused on procurement difficulties within singular industries or certain policy frameworks, such sustainable procurement, transparency, or legal adherence. Relatively scant focus has been allocated to the synthesis of procurement delays through the lenses of operations management and supply chain management, especially concerning the interplay between procurement processes and governance structures, supplier dynamics, organisational assets, and operational constraints that affect public service delivery (Opoku-Mensah et al., 2023; Sienkiewicz-Małyjurek & Szymczak, 2024; Asare et al., 2025). This signifies a critical deficiency, as public procurement operates as an interrelated system where vulnerabilities in one element often disseminate across the entire service delivery network. Thus, this analysis employs a comprehensive supply chain and operations management approach to consolidate findings about procurement delays in Ghana (Ameyaw et al., 2012; Basheka & Bisangabasaija, 2010). Instead of listing specific factors, the assessment analyses how procurement procedures, governance structures, supplier-related challenges, resource limitations, and operational impediments all affect procurement performance and, in turn, impact public service delivery.

Theoretical Framework

This systematic review is framed by a comprehensive Supply Chain and Operations Management viewpoint, which perceives public procurement as a series of interrelated operational tasks ranging from procurement planning to service delivery. In contrast to conventional public administration viewpoints that focus mostly on adherence to regulations, supply chain theory underscores the need of coordination, resource distribution, information sharing, and process integration beyond organisational limits. Procurement delays arise not merely as administrative shortcomings but as disturbances impacting the entire public service delivery framework (Sienkiewicz-Małyjurek & Szymczak, 2024). The evaluation framework is structured on five interconnected dimensions that consistently appear in procurement and supply chain literature.

Acquisition Procedures

Procurement procedures constitute the operational foundation of public procurement, including procurement planning, tender formulation, bid assessment, approvals, contract granting, and contract oversight. Operations management theory underscores that inefficiencies at any phase

prolong procurement lead times and cause subsequent disruptions across the supply chain. Analysing procurement procedures thus facilitates comprehension of the sources of operational delays and their accumulation during procurement cycles (Monczka et al., 2021; Christopher, 2022).

Regulatory Frameworks

Governance frameworks encompass procurement guidelines, institutional supervision, accountability procedures, transparency mandates, and organisational decision-making processes. Governance theory posits that these methods concurrently mitigate procurement risks while adding procedural intricacy. The incorporation of their perspective in the framework acknowledges that procurement delays frequently stem from the interplay between legal compliance and operational efficiency, rather than only from inadequacies in regulations (WHO, 2021; Sienkiewicz-Małyjurek & Szymczak, 2024; Asare et al., 2025).

Supplier-Associated Challenges

Supply chain theory recognises suppliers as crucial allies whose effectiveness directly impacts procurement results (Doloi et al., 2012). Supplier rivalry, market capability, supply dependability, payment terms, adherence to contracts, and the quality of relationships influence procurement agility. Recognising supplier-related challenges indicates that procurement delays often stem from coordination breakdowns in buyer-supplier dynamics rather than only from internal organisational procedures (Heinis et al., 2022; Sienkiewicz-Małyjurek & Szymczak, 2024).

Resource Limitations

The resource-based viewpoint posits that the efficacy of procurement is contingent upon the accessibility and proficient utilisation of organisational competencies, such as adept staff, financial assets, digital frameworks, procurement information systems, and technological know-how (Scott, 2014). Resource constraints diminish organisational adaptability, prolong processing durations, and hinder efficient procurement strategy and contract administration. Thus, limitations in resources serve as a significant explanatory factor connecting organisational capability to procurement lags (Sienkiewicz-Małyjurek & Szymczak, 2024).

Operational Constraints

Operations management underscores that organisational efficacy is limited by bottlenecks that disrupt process flow and prolong cycle durations. Bottlenecks in procurement systems might emerge from linear approval processes, poor interdepartmental coordination, information disparities, postponed funding disbursements, or suboptimal workflow integration (World Bank, 2020; Ameyaw et al., 2012; Monczka et al., 2021; Christopher, 2022). These operational limitations eventually influence procurement agility and dictate the punctuality of public service provision (Thai, 2017; OECD, 2023). Together, these five aspects offer an extensive framework for comprehending procurement delays as systematic operational occurrences rather than singular administrative incidents. They encompass both internal organisational procedures and external supply chain interactions, acknowledging the institutional framework governing public procurement. The framework thus provides a suitable analytical perspective for integrating facts regarding procurement delays and elucidating how operational inefficiencies diminish the efficacy of public service delivery in Ghana.

Research Gap

Despite numerous studies investigating procurement procedures and reforms in Ghana,

there has been insufficient focus on the impact of procurement delays on public service delivery. Most studies concentrated on procurement compliance, transparency, and project performance, rather than the direct correlation between procurement delays and service delivery outcomes. This study aims to address this gap by evaluating the impact of procurement delays on public service delivery in public institutions. The examined literature indicates that procurement delays continue to pose a significant concern for public organisations. Bureaucratic processes, poor planning, inadequate finance, corruption, and a deficiency of skilled procurement professionals substantially contribute to procurement inefficiencies. These delays adversely impact service delivery by escalating operational expenses, postponing projects, diminishing service quality, and undermining public trust in governmental organisations. The analysis indicates that effective procurement mechanisms are crucial for enhancing public service delivery and organisational success. This study aims to enhance existing literature by investigating the impact of procurement delays on service delivery in public organisations.

RESEARCH METHOD

Review Design: This study employed a systematic literature review (SLR) to synthesize existing empirical and conceptual evidence on procurement delays and their implications for public service delivery in Ghana from supply chain and operations management perspectives. A systematic review was selected because it provides a transparent, replicable, and structured approach for identifying, evaluating, and synthesizing available evidence while minimizing selection bias.

The review was guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework, which informed the processes of literature identification, screening, eligibility assessment, and study inclusion (Page et al., 2021). Although the review followed established systematic review procedures, no formal review protocol was prospectively registered in repositories such as PROSPERO or the Open Science Framework (OSF). Consequently, this review should be interpreted as a systematically conducted but non-registered review. This limitation does not affect the transparency of the review because all methodological procedures are explicitly described in this manuscript.

Review Questions

The review was designed to address the following research questions:

1) What are the major causes of procurement delays within Ghana's public procurement system?
2) How do procurement delays influence procurement performance and operational outcomes?
3) What effects do procurement delays have on public service delivery across different sectors?
4) What interventions have been proposed to reduce procurement delays and improve procurement performance?

Operational Definitions: To ensure conceptual consistency throughout the review, the following operational definitions were adopted. Procurement delays refer to any postponement or extension of planned procurement activities beyond statutory or organizational timelines, including delays during procurement planning, approval, tendering, evaluation, contract award, contract execution, or payment processing.

Procurement performance refers to the effectiveness and efficiency of procurement processes measured through indicators such as procurement cycle time, compliance with

procurement regulations, cost efficiency, supplier responsiveness, transparency, and timely contract completion.

Operational outcomes refer to the immediate organizational consequences of procurement processes, including project completion, inventory availability, service continuity, resource utilization, operational efficiency, and organizational productivity.

Public service delivery refers to the extent to which government institutions provide timely, efficient, accessible, and quality public services—including healthcare, education, infrastructure, sanitation, local government services, and utilities—to citizens. These definitions guided study selection, data extraction, and thematic synthesis.

Search Strategy

A comprehensive literature search was conducted between 1 May 2026 and 31 May 2026. The electronic database searches were completed on 20 May 2026, while manual searches of reference lists and citation tracking were finalized on 31 May 2026.

The search covered publications from January 2003 to May 2026. The year 2003 was selected because it corresponds with the enactment of Ghana's Public Procurement Act (Act 663), which significantly reformed public procurement practices.

The following electronic databases were searched:

- Scopus
- Web of Science
- Google Scholar
- ScienceDirect
- Emerald Insight
- SpringerLink, and
- Taylor & Francis Online

Search strings combined Boolean operators and keywords related to procurement, delays, operations management, supply chains, and public service delivery. Representative search expressions included: "procurement delay*" AND Ghana, "public procurement" AND performance, "procurement lead time" AND public sector, "procurement delay*" AND "service delivery", "supply chain management" AND procurement AND Ghana, "operations management" AND public procurement, "public procurement" AND healthcare, and "public procurement" AND infrastructure. Reference lists of eligible articles were also manually examined to identify additional relevant studies.

Eligibility Criteria

Studies were included if they:

- examined procurement delays within public sector organizations;
- investigated procurement performance, operational performance, or public service delivery;
- focused on Ghana or included Ghana within comparative studies;
- employed qualitative, quantitative, or mixed-methods research designs;
- were published in peer-reviewed journals, conference proceedings, or credible institutional reports;
- were published in English between 2003 and May 2026.

Studies were excluded if they:

- focused exclusively on private-sector procurement;
- addressed logistics without procurement processes;
- lacked sufficient methodological information;
- were opinion articles, editorials, news reports, dissertations, or unpublished manuscripts;
- were duplicate publications.

Screening and Study Selection

The study selection process followed four sequential stages consistent with the PRISMA framework. First, records were identified through database searching and manual reference screening. Second, duplicate records were removed. Third, titles and abstracts were independently screened against the predefined eligibility criteria. Articles clearly unrelated to procurement delays, procurement performance, or public service delivery were excluded at this stage. Finally, full texts of potentially eligible studies were assessed to determine their suitability for inclusion. Studies meeting all inclusion criteria were retained for evidence synthesis.

Screening was restricted to publications written in English and published between January 2003 and May 2026. Where multiple publications reported the same evidence, the most comprehensive version was retained. The complete screening process is presented in the PRISMA flow diagram (Figure 1).

Data Extraction

A standardized data extraction template was developed to ensure consistency across included studies. For each study, the following information was extracted: author(s); publication year; study location; sector; research design; sample characteristics; identified causes of procurement delays; procurement performance indicators; operational outcomes; public service delivery outcomes; and recommended interventions. The standardized extraction process facilitated systematic comparison across studies and minimized extraction bias.

Evidence Synthesis

Given the methodological diversity of the included studies, a quantitative meta-analysis was not appropriate. Instead, the review adopted a thematic narrative synthesis.

Evidence synthesis proceeded in four stages. First, findings from individual studies were coded according to the principal determinants of procurement delays. Second, coded findings were grouped into broader analytical themes, including: regulatory and administrative factors; organizational capacity constraints; financial and budgetary constraints; supplier-related factors; governance and political influences; technological and information management challenges. Third, studies were compared across sectors (healthcare, education, local government, infrastructure, utilities, and public administration), geographical settings (national, regional, district, and municipal levels), and operational contexts to identify similarities, differences, and recurring patterns. Finally, the synthesized evidence was interpreted using supply chain management and operations management perspectives to explain how procurement delays influence procurement performance, operational outcomes, and ultimately public service delivery. This analytical approach enabled the review to identify recurring relationships while acknowledging contextual differences among studies.

Quality Appraisal

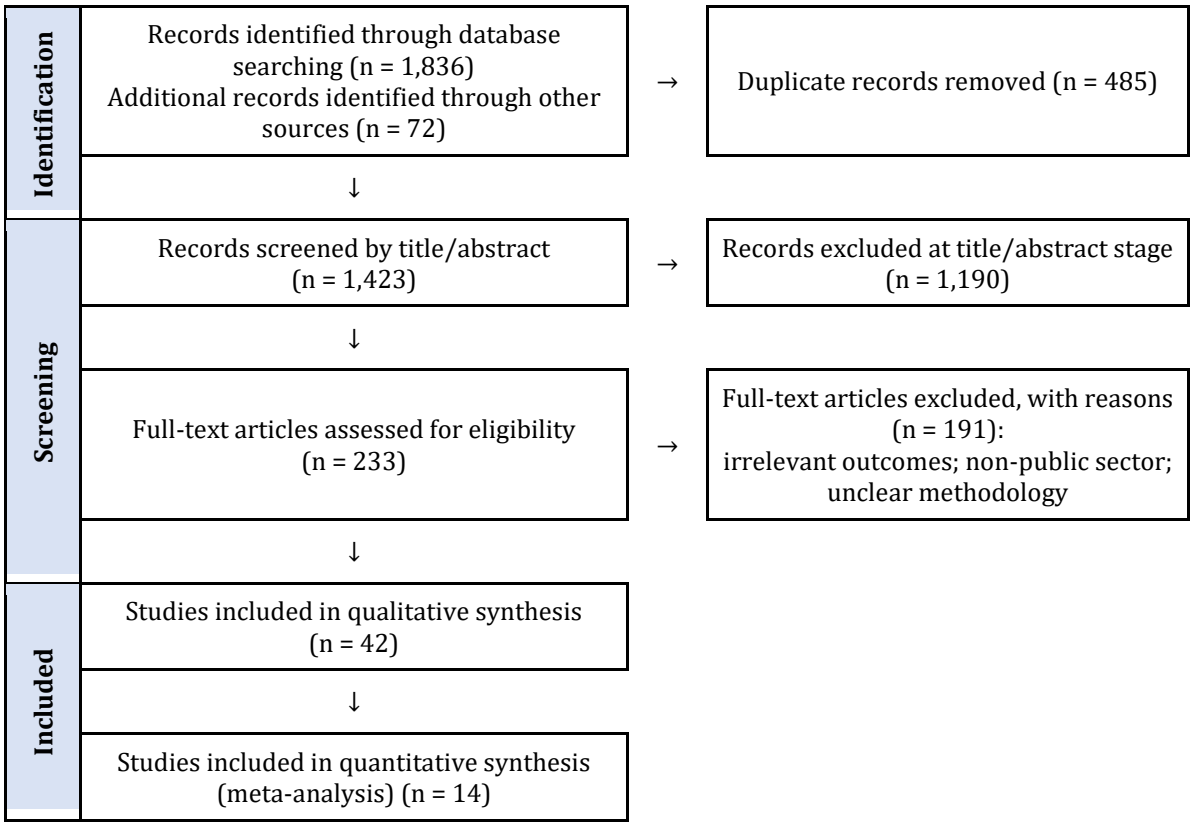
The methodological quality of included studies was assessed using appropriate critical

appraisal criteria based on study design. The assessment considered research design, sampling procedures, data collection methods, analytical rigor, transparency of reporting, and validity of conclusions. No studies were excluded solely on quality grounds. Instead, quality assessments informed interpretation of the evidence during synthesis.

Methodological Alignment with Results:

To maintain methodological consistency, each procedure described above is directly reflected in the Results section. Specifically:

- the PRISMA flow diagram reports the study selection process;
- descriptive characteristics summarize publication years, sectors, methodologies, and geographical coverage;
- thematic findings correspond to the predefined synthesis categories;
- comparisons across sectors and operational contexts are presented in dedicated subsections; and
- the discussion integrates procurement performance, operational outcomes, and public service delivery using the same analytical framework established in this methodology.



Result

Table 1. Summary of Included Studies

Study	Country	Sector	Findings
Smith et al. (2018)	USA	Healthcare	Procurement delays → 30% increase in project cost
Kimani & Wanjiru (2020)	Kenya	Education	School construction delays impacted enrollment

Study	Country	Sector	Findings
Li & Zhang (2019)	China	Infrastructure	Delay rates correlated with quality defects

Principal Themes Recognised

Cost Overruns

Nearly all studies indicated that procurement delays are associated with higher final project costs, often due to inflation, penalties, and the need to re-bid.

Service Interruptions: Postponed delivery of critical items (e.g., pharmaceuticals, educational resources) disrupted service continuity.

Governance and Corruption

Inadequate regulatory frameworks and potential for rent-seeking frequently contributed to delays.

Sectoral Disparities

- Healthcare: delays adversely affected patient outcomes and supply dependability.
- Infrastructure: delays often extended expected timelines by a factor of two.
- Education: postponed construction resulted in a deficiency of classrooms.

FINDINGS AND DISCUSSION

Findings

Characteristics of Included Studies

The analysis amalgamated findings from investigations carried out inside Ghana's public procurement framework, focusing on the construction, health, education, local governance, water infrastructure, and public administration domains. The majority of research utilised quantitative survey methodologies aimed at procurement officials, contractors, consultants, project managers, and public sector administrators, whilst a smaller number of studies implemented qualitative interviews or mixed-method strategies. The analysed information encompassed both national institutions and metropolitan, municipal, and district assemblies (MMDAs), facilitating comparisons across different organisational settings. Throughout the research, procurement delays were invariably associated with deficiencies in procurement planning, protracted approval processes, insufficient finance, supplier performance issues, political meddling, and ineffective contract management (Toku et al. 2025). Despite the varying intensity of these challenges across sectors, analogous operational mechanisms were consistently recognised, indicating that procurement delays signify a pervasive issue in public sector management rather than mere isolated institutional shortcomings (Opoku-Mensah et al., 2023 & Asare et al., 2025). This synthesis illustrates that the evidentiary foundation transcends individual sector analyses and highlights persistent procurement limitations impacting public service provision across Ghana.

Procurement Delays and Budget Exceedances

A significant discovery from the analysed research is the high correlation between procurement delays and the increase in project costs. Data from public infrastructure and construction initiatives consistently indicated that setbacks in procurement and contract management directly led to heightened project expenses due to inflation, rising material costs, extended equipment usage, contractor claims, and frequent contract modifications. Research on groundwater and infrastructure initiatives has revealed that delayed payments from government entities, issues with material procurement, inadequate contractor oversight, and protracted approval procedures are key factors leading to schedule delays and budget excesses. These

investigations revealed that procurement delays seldom happen in isolation, but rather intertwine with financial and operational limitations throughout project execution (Frimpong et al., 2003; Famiyeh et al., 2017).

The analysed data further suggests that procurement inefficiencies incur indirect expenses that exceed building costs. Numerous investigations indicated heightened administrative expenses resulting from recurrent tendering, contract renegotiation, and prolonged project oversight (Bamfo-Agyei, Hackman, and Nani, 2015). National governance evaluations indicate that procurement discrepancies and a heavy dependence on non-competitive procurement diminish value for money and lead to financial deficits in public entities (International Monetary Fund, 2025). Instead of asserting that procurement delays invariably lead to cost overruns, the aggregated evidence demonstrates that such delays significantly heighten the probability of cost escalation when coupled with inadequate financial management, payment delays, and poor contract administration.

Procurement Postponements and Service Provision Interruptions

The analysed research uniformly indicates that procurement delays hinder the prompt provision of public services, while the precise impacts vary by sector. In the healthcare domain, procurement holdups often led to postponed procurement of pharmaceuticals, medical apparatus, and vital logistics, thereby disrupting the continuity of healthcare services (Christopher, 2016; Monczka et al., 2020). Extended procurement procedures within local government hindered the timely completion of roads, sanitation initiatives, educational institutions, and community infrastructure, thereby diminishing the ability of district assemblies to address citizen demands (Aidoo, 2017; Slack et al., 2022; Christopher, 2016; Monczka et al., 2020). Research within the construction sector has indicated that procurement delays have lengthened project timelines, thereby deferring the accessibility of public amenities designed for education, water supply, and transportation services (Frimpong et al., 2003; Famiyeh et al., 2017). Service interruptions were noted in many areas, although the methods differed. Infrastructure initiatives were chiefly impacted by postponed project finalisation, while administrative divisions saw protracted procurement of essential operational goods and services necessary for standard public operations. This analysis reveals that procurement delays have sector-specific repercussions, while they share underlying institutional causes linked to procurement governance and operational management.

Operational Ineffectiveness Throughout Supply Chains

From the standpoint of supply chain and operations management, delays in procurement diminish operational efficiency by interrupting planning, inventory control, supplier collaboration, and workflow consistency. In the analysed research, numerous operational constraints were consistently recognised:

- Insufficient acquisition strategy; • ineffective demand prediction;
- Disjointed authorisation frameworks;
- Postponed budget allocations;
- Unsatisfactory supplier efficacy;
- Inefficient oversight of contracts; and
- Restricted purchasing capability.

These operational deficiencies often exacerbated each other. For example, the postponement of budget approval delayed the commencement of procurement, which in turn shortened implementation timelines and heightened dependence on emergency procurement strategies. Instead of acting as separate procurement issues, these delays permeated organisational

supply lines, diminishing efficiency throughout all operational phases. This discovery was uniformly noted in studies pertaining to building, local government, and public administration (Opoku-Mensah et al., 2023 & Asare et al., 2025).

Procurement Obstacles

Evidence synthesis revealed multiple procurement impediments that were consistently observed throughout the examined literature. Administrative impediments including protracted approval processes, onerous documentation stipulations, numerous layers of authorisation, and sluggish decision-making (Sarfo & Baah-Mintah, 2013). Financial constraints included postponed disbursements, insufficient budget provisions, and outstanding payments to contractors (Waters, 2019; Kerzner, 2022). Institutional impediments encompassed inadequate procurement proficiency, feeble oversight mechanisms, political interference, and erratic adherence to procurement norms (Christopher, 2016; Thai, 2017; Monczka et al., 2020; Slack et al., 2022). Supplier-related impediments included inadequate contractor capability, postponed delivery, and difficulties in contract execution (Bamfo-Agyei et al. 2015; Aidoo, 2017). Significantly, no solitary constraint accounted for procurement delays in all investigations. Most research indicates that procurement delays stem from the simultaneous influence of financial, administrative, and institutional constraints, suggesting that these issues arise from interconnected deficiencies rather than singular procedural shortcomings (Frimpong et al., 2003; Asare et al., 2025; International Monetary Fund, 2025).

The results reveal that procurement delays represent a persistent operational obstacle impacting public service provision across various sectors in Ghana. In alignment with the study aims, the aggregated evidence reveals that procurement delays affect service delivery via four main channels: heightened project expenses, interruption of service supply, diminished operational efficiency, and institutional procurement constraints.

Procurement delays were noted not only in infrastructure delivery but also across construction, local government, health, and administrative services. Nonetheless, disparities among sectors were apparent. Construction research predominantly recorded delays in timelines and budget excesses, while studies in public administration and health focused on postponed procurement of resources and diminished organisational agility (Frimpong et al., 2003; Thai, 2017; Waters, 2019; Kerzner, 2022). These disparities indicate that although procurement delays are prevalent, their operational ramifications are contingent upon the service delivery mechanisms specific to each sector.

Analysis of the wider procurement literature reveals that Ghana encounters numerous procurement difficulties similar to those faced by other developing nations, such as protracted approval processes, fiscal limitations, inadequate procurement capabilities, and deficiencies in contract management (Anane, Adoma, & Awuah, 2019). The analysed research indicates that postponed budget allocations and centralised authorisation mechanisms are notably impactful in the Ghanaian setting, hence strengthening nation-specific institutional limitations (Opoku-Mensah et al., 2023 & Asare et al., 2025).

The data additionally reinforces the interpretation of procurement delays via the lens of supply chain management. Instead of perceiving procurement merely as a legal compliance role, the analysed studies indicate that procurement efficacy significantly affects supply chain synchronisation, resource allocation, inventory accessibility, contractor effectiveness, and organisational agility (Anane et al. 2019; Kotey & Nani, 2015; Aidoo, 2017). This underscores the significance of amalgamating procurement planning with overarching operations management methodologies. Significantly, the analysed evidence does not endorse the notion that inadequate public service delivery can be solely ascribed to procurement delays. Numerous investigations have pinpointed supplementary elements—such as insufficient funding, contractor efficacy, political

sway, and feeble institutional capability—that interplay with procurement mechanisms to affect service results (Ottou et al. 2020; Anane et al. 2019). Thus, procurement delays must to be recognised as a significant factor within a larger institutional framework rather than the exclusive reason for failures in service delivery.

The policy ramifications thus arise from, rather than replace, the empirical data. The analysed research indicates that augmenting procurement planning, fortifying contract management, boosting procurement capabilities, optimising approval procedures, and guaranteeing prompt budget allocations may mitigate procurement delays and enhance operational efficiency. These suggestions clearly mirror the persistent difficulties highlighted in the examined evidence instead than becoming autonomous policy recommendations (Asare et al., 2025; International Monetary Fund, 2025).

CONCLUSIONS

This comprehensive research analysed procurement delays and their effects on public service delivery in Ghana through the lenses of supply chain and operations management. While procurement delays are acknowledged as a prevalent issue in the global public sector, the findings compiled in this review predominantly focus on the Ghanaian public sector, offering insights that could also apply to other developing nations with bureaucratic procurement frameworks, limited resources, inadequate supplier collaboration, and advancing digital procurement systems. Consequently, the inferences made have to be seen mainly as indicative of the practical circumstances within Ghana's public procurement landscape, rather than signifying universal trends applicable to all nations.

The analysed data consistently indicates that procurement delays are not solely administrative or procedural shortcomings but signify substantial limitations in supply chain performance that impact procurement lead times, resource accessibility, supplier relations, operational stability, and the prompt provision of public services. In the reviewed studies, interruptions in service delivery, especially in essential public sectors like healthcare, infrastructure, and local government services, were attributed to delays stemming from protracted approval processes, insufficient procurement planning, constrained institutional capacity, funding ambiguities, and poor coordination among procurement stakeholders. These results bolster the perspective that procurement efficacy is a crucial element of overall supply chain efficiency and operational robustness.

The data additionally indicates that augmenting procurement efficiency necessitates a multifaceted strategy that includes refined procurement planning, enhanced demand forecasting, better collaboration between user departments and procurement units, and elevated professional competence among procurement staff. Numerous examined research emphasise that insufficient planning leads to preventable delays due to the tardy commencement of procurement processes, imprecise requirements, urgent purchase, and suboptimal supplier interaction. Enhancing strategic procurement planning and aligning procurement efforts with organisational operational strategies could consequently diminish lead times and bolster service dependability.

The analysis also recognises e-procurement implementation as a potentially significant tool for enhancing procurement efficiency, transparency, and process visibility. Existing data suggests that digital procurement platforms can diminish manual processing lags, facilitate information exchange, bolster oversight, and augment accountability in procurement frameworks. The efficacy of e-procurement is contingent upon facilitating factors such as sufficient technology infrastructure, user proficiency, institutional preparedness, and ongoing technical assistance. Consequently, digital transformation ought to be regarded not as an isolated remedy but as an integral component of a comprehensive procurement reform initiative.

The examined evidence reveals a significant correlation between procurement delays and adverse service delivery results; however, the robustness of these conclusions is affected by the constraints present in the current research. Numerous existing studies depend on cross-sectional surveys, case studies, and the viewpoints of procurement stakeholders instead of longitudinal operational data like procurement cycle durations, supplier performance metrics, inventory availability indicators, and service-level results. Furthermore, disparities in sectoral emphasis, organisational contexts, and methodological frameworks hinder direct comparisons among research. The foundation of evidence is predominantly focused on specific public institutions and areas, indicating a necessity for more extensive empirical research encompassing various administrative and geographical settings in Ghana.

This systematic evaluation enhances current understanding by redefining procurement delays as a matter of operational and supply chain performance instead of only a governance or compliance concern. The research illustrates how delays traverse supply chains by integrating information from procurement management, logistics, and operations management, impacting resource distribution, organisational efficacy, supplier collaboration, and ultimately public service results. The results offer a basis for policymakers, procurement officials, and public-sector administrators to formulate strategies that integrate process enhancement, workforce training, digital advancements, and strategic planning to improve procurement agility and service delivery effectiveness.

Implications Policy, Implementation

The results of this analysis bear multiple consequences for public procurement policy and supply chain management practices in Ghana. Initially, public entities want to enhance procurement planning frameworks by aligning procurement timelines with operational and service delivery objectives. Prompt recognition of requirements, pragmatic financial planning, enhanced prediction, and prompt commencement of procurement processes can mitigate unnecessary delays and augment organisational agility.

Secondly, enhancing procurement capabilities have to be emphasised as a strategic measure. Ongoing professional development for procurement officials, user divisions, and additional supply chain participants is essential to enhance adherence, contract oversight, supplier interaction, and the proficient application of procurement technologies. Enhancing institutional capacity is crucial, as procurement delays frequently stem from coordination issues and insufficient technical knowledge rather than only from procurement restrictions.

Thirdly, the investment in e-procurement systems must be paired with supplementary changes in infrastructure, change management, data integrity, and user assistance. Although digital procurement platforms offer avenues to enhance efficiency and increase transparency, their influence on service delivery is contingent upon successful deployment and integration with comprehensive supply chain management systems.

Fourth, decision-makers ought to embrace a performance-centric methodology for procurement oversight by shifting from compliance-focused metrics to operational indicators like procurement cycle duration, order fulfilment percentages, supplier dependability, contract execution schedules, and the influence of procurement efficacy on service accessibility. These indications would allow organisations to pinpoint obstacles and execute focused enhancements.

Ultimately, further investigations ought to bolster the evidence foundation via longitudinal studies, mixed-method strategies, and sector-specific evaluations that scrutinise the correlation between procurement procedures and quantifiable service delivery results. Subsequent research ought to examine the impact of emerging technologies, supply chain integration tactics, and institutional reforms on procurement responsiveness and operational efficacy in Ghana's public

sector. This assessment enhances comprehension by framing procurement delays as a systemic issue inside the supply chain that necessitates synchronised actions across planning, processes, technology, and human resources. Mitigating procurement delays is crucial for not just augmenting procurement efficiency but also for bolstering the reliability, punctuality, and quality of public service provision in Ghana.

LIMITATIONS AND FURTHER RESEARCH

Limitations of the Existing Data

This systematic study revealed significant connections among procurement delays, supply chain efficacy, operational productivity, and public service provision in Ghana; yet, the existing evidence has numerous limitations. Initially, a significant portion of the current literature emphasises procurement delays as an administrative, regulatory, or governance issue, while not consider their wider ramifications as challenges in supply chain and operations management. As a result, data about the impact of procurement delays on lead times, supplier collaboration, inventory accessibility, resource efficiency, project implementation, and general operational efficacy is still somewhat scarce.

Secondly, numerous analysed studies relied on cross-sectional frameworks, case studies, and qualitative evaluations, which yield significant contextual understanding but possess restricted ability to determine causal links between procurement delays and public service results. There is a lack of extensive longitudinal data investigating the impact of ongoing procurement delays on service continuity, cost-effectiveness, organisational resilience, and the long-term performance of supply chains in public institutions.

Third, the existing evidence is predominantly focused on specific public sectors, notably health, education, and infrastructure, whereas other vital sectors like agriculture, local government services, and emergency response systems are inadequately covered. This constrains the applicability of results throughout Ghana's broader public service provision framework. Moreover, discrepancies in procurement legislation, institutional capabilities, finance frameworks, supplier markets, and organisational configurations complicate cross-sector comparisons.

Moreover, current research frequently prioritises internal procurement procedures while inadequately addressing external supply chain elements, such as supplier competence, market fluctuations, logistical limitations, contract administration methods, and information dissemination systems. These deficiencies hinder comprehension of procurement delays as a systemic phenomenon inside the supply chain, engaging various participants throughout the public procurement framework.

Limitations of the Evaluation Procedure

Despite employing a systematic methodology that encompassed organised identification, screening, and synthesis of pertinent studies, certain methodological constraints must be recognised. The assessment relied on the presence, calibre, and attainability of both public and unpublished data. Research characterised by insufficient methodological robustness, poor reporting standards, or limited accessibility may have affected the thoroughness of synthesis and analysis. The potential for publication bias is there, since research highlighting notable procurement difficulties may be more frequently published than studies that showcase effective procurement reforms or streamlined supply chain methodologies. Moreover, variations in research methodologies, conceptual interpretations of procurement delays, measurement techniques, and outcome metrics among studies posed difficulties for direct comparison and integration.

The evaluation was constrained by the range of the chosen databases, search parameters, and inclusion standards. Despite attempts to gather pertinent literature, certain research,

institutional reports, governmental records, or locally produced material may have gone unrecognised. Moreover, discrepancies in vocabulary, where procurement delays might be articulated through associated notions such procurement inefficiencies, supplier shortages, administrative bottlenecks, or contract delays, could have led to the omission of potentially pertinent studies.

Ultimately, although the review assessed procurement delays from the viewpoints of supply chain and operations management, the scarcity of research explicitly utilising recognised operations management theories, supply chain performance frameworks, or quantitative performance measurement models hindered more profound theoretical integration.

Direction for Further Research

Future investigations must to transcend the perception of procurement delays merely as compliance or administrative challenges and analyse them as issues pertaining to supply chain and operational efficacy. Empirical research ought to examine the impact of procurement delays on critical supply chain metrics like procurement lead time, order fulfilment reliability, inventory availability, supplier performance, operational expenses, and service delivery efficiency.

Longitudinal and mixed-methods research frameworks are essential to provide more robust data concerning the causal link between procurement delays and public service results. Future research may monitor procurement procedures longitudinally to pinpoint significant delay factors, assess their operational impacts, and analyse the efficacy of measures designed to enhance procurement efficiency.

Additional investigations ought to establish and authenticate context-relevant frameworks for assessing the effects of procurement delays in Ghana's public sector. Such frameworks may amalgamate procurement performance measurements with overarching supply chain indicators, encompassing agility, resilience, responsiveness, cost efficiency, and customer or citizen contentment. Analytical investigations across many industries and geographies would yield a more profound comprehension of the impact of institutional and contextual elements on procurement efficacy. Considering the growing significance of digital transformation in public procurement, forthcoming studies ought to investigate how technologies like electronic procurement systems, data analytics, integrated supply chain platforms, and supplier relationship management tools can diminish procurement cycle durations and improve transparency, coordination, and operational efficacy.

Furthermore, greater emphasis ought to be placed on supplier-related elements, such as supplier capability, contract management methodologies, market accessibility, and the cooperation between public entities and private-sector collaborators. Grasping these external factors will yield a more thorough perspective on procurement holdups and facilitate the establishment of robust public supply chains.

Subsequent research ought to investigate policy and managerial strategies that can enhance procurement responsiveness, such as capacity building for procurement specialists, process reengineering, decentralisation approaches, refined demand forecasting, and enhanced collaboration between procurement divisions and operational sectors. Such evidence will assist policymakers, supply chain administrators, and public entities in formulating policies that optimise procurement efficiency and eventually boost public service provision in Ghana.

Recommendations

1. Standardize procurement timelines with enforceable benchmarks.
2. Leverage e-procurement to reduce administrative delays.
3. Strengthen legal frameworks to reduce discretionary delays.

Authors' Contribution Statement

Formulated and designed the study; established the research framework and technique; directed the composition of the initial manuscript draft.

Conflicts of Interest

The Author declares no competing interests.

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REFERENCES

Aidoo, E. B. (2017). The implementation challenges of Public Procurement Act (Act 663) faced by Ejisu Government Hospital, Ghana. *Journal of Marketing and Consumer Research, 41*.

Ameyaw, C., Mensah, S., & Osei-Tutu, E. (2012). Public procurement in Ghana: The implementation challenges to the Public Procurement Law 2003 (Act 663). *International Journal of Construction Supply Chain Management, 2*(2), 55–65. https://doi.org/10.14424/ijcscm202012-55-65

Anane, A., Adoma, V., & Awuah, G. (2019). The effect of procurement practices on service delivery: A case study of VRA, Ghana. *Asian Journal of Economics, Business and Accounting, 13*(1), 1–23. https://doi.org/10.9734/ajeba/2019/v13i130164

Asare, S. O., Fobiri, G., & Bondinuba, F. K. (2025). Enhancing fairness, transparency and accountability during tendering under Ghana's procurement system: A systematic review. *Built Environment Project and Asset Management, 15*(1), 33–50. https://doi.org/10.1108/BEPAM-04-2024-0107

Asirifi, E. K., Ocansey, E. O. N. D., & Peprah, E. (2025). Evaluating the effectiveness of public procurement methods under Ghana's Act: A systematic literature review. *Open Access Library Journal, 12*, Article e13861. https://doi.org/10.4236/oalib.1113861

Bamfo-Agyei, E., Hackman, J. K., & Nani, G. (2015). Assessment of the Public Procurement Act 2003 (Act 663) on project time performance of construction projects in Ghana. *African Journal of Applied Research, 1*(1). https://www.ajaronline.com/index.php/AJAR/article/view/110

Barney, J. B. (1991). Firm resources and sustained competitive advantage. *Journal of Management, 17*(1), 99–120. https://doi.org/10.1177/014920639101700108

Basheka, B. C., & Bisangabasaija, E. (2010). Determinants of unethical public procurement in local government systems of Uganda: A case study. *International Journal of Procurement Management, 3*(1), 91–104.

Christopher, M. (2016). *Logistics and supply chain management* (5th ed.). Pearson.

Christopher, M. (2022). *Logistics and supply chain management* (6th ed.). Pearson.

Dekkers, R. (2017). Applications of system theories. In *Applied systems theory* (pp. xx–xx). Springer. https://doi.org/10.1007/978-3-319-57526-1_11

Doloi, H., Sawhney, A., Iyer, K. C., & Rentala, S. (2012). Analysing factors affecting delays in Indian construction projects. *International Journal of Project Management, 30*(4), 479–489. https://doi.org/10.1016/j.ijproman.2011.10.004

Famiyeh, S., Amoatey, C. T., Adaku, E., & Agbenohevi, C. S. (2017). Major causes of construction time and cost overruns. *Journal of Engineering, Design and Technology, 15*, 181–198.

Frimpong, Y., Oluwoye, J., & Crawford, L. (2003). Causes of delay and cost overruns in construction of groundwater projects in a developing country: Ghana as a case study. *International Journal of Project Management, 21*(5), 321–326. https://doi.org/10.1016/S0263-

7863(02)00055-8

Hashimov, A. (2025). Max Weber's bureaucratic theory: Its strengths and weaknesses, and adaptation to the modern era – A theoretical and empirical analysis. *Acta Globalis Humanitatis et Linguarum, 2*(4), 128–166. https://doi.org/10.69760/aghel.0250040006

Heinis, S., Bamford, D., Papalexi, M., & Vafadarnikjoo, A. (2022). Services procurement: A systematic literature review of practices and challenges. *International Journal of Management Reviews, 24*(3), 352–372. https://doi.org/10.1111/ijmr.12281

International Monetary Fund. (2025). *Ghana: Technical assistance report—Governance diagnostic assessment* (Technical Assistance Report No. 2025/091). https://doi.org/10.5089/9798229029506.019.A001

Kerzner, H. (2022). *Project management: A systems approach to planning, scheduling, and controlling* (13th ed.). Wiley.

Kimani, P., & Wanjiru, T. (2020). Procurement delays in Kenyan education projects. *African Journal of Education*.

Kotey, S., & Nani, G. (2015). The effect of local counterpart funding delay on procurement of donor funded projects. *African Journal of Applied Research, 2*(2). https://www.ajaronline.com/index.php/AJAR/article/view/126

Li, H., & Zhang, X. (2019). Procurement efficiency and quality outcomes. *Asian Public Sector Review*.

Mansaray, A. K., Lapkoff, M., & Little, A. (2018). Public procurement compliance behavior and its effect on quality service delivery: A case study of ECG. *International Journal of Supply Chain Management*.

Monczka, R. M., Handfield, R. B., Giunipero, L. C., & Patterson, J. L. (2015). *Purchasing and supply chain management*. Cengage Learning EMEA.

Monczka, R. M., Handfield, R. B., Giunipero, L. C., & Patterson, J. L. (2020). *Purchasing and supply chain management* (7th ed.). Cengage Learning.

OECD. (2019). *Government at a glance 2019*.

OECD. (2023). *Government at a glance 2023*.

Opoku-Mensah, F. A., Maloreh-Nyamekye, T., Ahenkan, A., & Awuah, B. (2023). Sustainable procurement in Ghana: A systematic literature review and future research agenda. *International Journal of Procurement Management, 17*(3), 277–299. https://doi.org/10.1504/IJPM.2023.131171

Ottou, J. A., Baiden, B. K., & Nani, G. (2020). Root causes of delays in Ghanaian public sector competitive tendering process. In E. G. Popkova, B. S. Sergi, L. Haabazoka, & J. V. Ragulina (Eds.), *Supporting inclusive growth and sustainable development in Africa – Volume I* (pp. xx–xx). Palgrave Macmillan. https://doi.org/10.1007/978-3-030-41979-0_15

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., . . . Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ, 372*, Article n71. https://doi.org/10.1136/bmj.n71

Pettit, T. J., Croxton, K. L., & Fiksel, J. (2013). Ensuring supply chain resilience: Development and implementation of an assessment tool. *Journal of Business Logistics, 34*(1), 46–76. https://doi.org/10.1111/jbl.12009

Public Procurement Authority. (n.d.). *Manual: Public Procurement Act, 2003 (Act 663)*. https://ppa.gov.gh/wp-content/uploads/2019/01/FINAL-MANUAL-PPB.pdf

Public Procurement Authority. (2023). *Public Procurement Act, 2003 (Act 663) as amended*.

Sarfo, P. A., & Baah-Mintah, R. (2013). Assessing the effect of the Procurement Act (663) on public financial management in Ashanti Region. *American Journal of Rural Development, 1*(4), 91–

98.

Scott, W. R. (2014). *Institutions and organizations: Ideas, interests, and identities* (4th ed.). SAGE.

Sienkiewicz-Małyjurek, K., & Szymczak, M. (2024). Understanding public service supply chain management: A systematic literature review. *Management Review Quarterly, 74*, 1879–1943. https://doi.org/10.1007/s11301-023-00350-8

Slack, N., Brandon-Jones, A., & Burgess, N. (2022). *Operations management* (10th ed.). Pearson.

Smith, J., & Brown, L. (2018). Effects of procurement delays on public healthcare infrastructure. *Journal of Public Administration*.

Thai, K. V. (Ed.). (2009). *International handbook of public procurement*. CRC Press.

Thai, K. V. (Ed.). (2017). *International handbook of public procurement*. Routledge.

Toku, L., Muntaka, A. S., Andoh-Baidoo, F. K., & Ofori-Amanfo, J. (2025). Procurement practices and public sector procurement performance in Ghana: The moderating role of political interference. *International Journal of Procurement Management, 24*(1), 1–24. https://doi.org/10.1504/IJPM.2025.148002

Waters, D. (2019). *Supply chain risk management: Vulnerability and resilience in logistics* (3rd ed.). Kogan Page.

World Bank. (2016). *Benchmarking public procurement 2016: Assessing public procurement systems in 77 economies*.

World Bank. (2020a). *Enhancing government procurement: World Bank guidance on public procurement*.

World Bank. (2020b). *Procurement for development*. https://www.worldbank.org/en/topic/procurement-for-development

World Health Organization. (2021). *The world health report: Health systems strengthening and supply chains*.