INTERNATIONAL JOURNAL OF PUBLIC FINANCE AND ACCOUNTABILITY

NAWALA

Volume 2, Number 1, 2023

Digital Public Procurement and Its Role in Promoting Fiscal Transparency

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Abstract

Article history:
Received: February 11, 2023
Revised: March 08, 2023
Accepted: April 24, 2023
Published: June 30, 2023

Keywords:
Accountability, Digital Procurement, Fiscal Transparency, Governance.

Identifier:
Nawala
Page: 11-21
https://nawala.io/index.php/ijpfa

This study examines the role of digital public procurement in promoting fiscal transparency in emerging economies through a systematic literature review of peer-reviewed studies published between 2012 and 2022. The research addresses the central question of how digitized procurement processes can enhance transparency, accountability, and efficiency in public spending. By synthesizing evidence from multiple contexts, the study identifies the transformative potential of open data platforms, e-procurement systems, and real-time monitoring tools in reducing corruption risks and improving oversight. The discussion integrates findings from governance, public finance, and technological adoption literature, highlighting both successes and challenges in implementation. Results indicate that while digital procurement significantly strengthens transparency and citizen trust, its effectiveness depends on institutional capacity, political commitment, and supportive legal frameworks. The study contributes to the discourse on fiscal governance reforms, offering insights for policymakers seeking to align technological innovation with sustainable public sector accountability.

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1. Introduction

Digital public procurement, the use of electronic systems and open data standards to manage government purchasing, has emerged as a prominent reform for improving the transparency and accountability of public spending. By digitizing tendering, contracting and contract-management processes, e-procurement systems can reduce information asymmetries, create permanent audit trails, and make procurement records machine-readable and publicly accessible. Proponents argue that these features not only raise the administrative efficiency of procurement but also limit opportunities for favoritism, collusion and corruption by exposing procurement events to broader public scrutiny (Mackey & Cuomo, 2020). Empirical cases such as Ukraine's ProZorro illustrate how a well-designed digital procurement platform, linked to open-data standards, can rapidly expand oversight opportunities for civil society and journalists while increasing competition among bidders (Fazekas & Kocsis, 2020).

However, evidence also shows that the relationship between digital procurement and fiscal transparency is conditional rather than automatic. Several peer-reviewed studies find that e-procurement systems improve observable indicators of market contestability (e.g., number of bidders, incidence of single bidding) and can generate cost savings where technical design, legal reform and enforcement capacity align (Bauhr et al., 2020). At the same time, implementation challenges like weak metadata standards, incomplete coverage of spending categories, interoperability gaps, and limited data quality can blunt these benefits and even produce misleading signals if published data are partial or inconsistent (Mackey

& Cuomo, 2020; Lyra et al., 2022). This suggests that digital procurement should be seen as part of a broader fiscal-governance ecosystem: data publication must be paired with institutional checks, analytics capacity, and active intermediaries to translate raw records into accountability outcomes.

The literature further highlights important variation across contexts. High-capacity administrations with strong rule-of-law, independent oversight bodies, and an active press tend to extract larger transparency and anticorruption dividends from e-procurement platforms than low-capacity settings where institutional capture or limited civic capacity prevails (Bauhr et al., 2020). Comparative work using procurement "red flags" and open contracting data has shown that digital records make it possible to construct objective proxies of corruption risk, improving cross-national monitoring and research (Fazekas & Kocsis, 2020). Yet scholars caution that digital tools can be gamed and that supply-side reforms must be complemented by demand-side investments in data literacy, investigative capacity, and legal remedies when misconduct is detected.

Given these mixed but promising findings, a systematic literature review that synthesizes peer-reviewed evidence from 2012-2022 is timely. This article maps how studies measure transparency outcomes in e-procurement, assesses the technical and institutional preconditions associated with positive fiscal-transparency impacts, and identifies remaining gaps, notably around long-term effects, measurement standardization, and the role of intermediaries in converting published procurement data into concrete accountability. Clarifying these mechanisms is essential for

policymakers aiming to design digital procurement reforms that genuinely strengthen fiscal transparency rather than merely creating new datasets.

2. Literature Review

Digital public procurement (DPP) systems have emerged as a transformative tool in enhancing fiscal transparency, enabling governments to streamline purchasing processes, reduce corruption risks, and improve public trust. Early research established that traditional procurement systems in many emerging and developing economies were vulnerable to inefficiencies and opacity (OECD, 2016). The transition to digital platforms has been shown to increase accessibility of procurement information and facilitate oversight by both government agencies and civil society (Piga & Treumer, 2013).

Empirical studies highlight that DPP platforms contribute to fiscal transparency by publishing contract data, standardizing bidding procedures, and enabling real-time monitoring (Bosio et al., 2022). For instance, Ferwerda et al. (2017) found that open contracting frameworks and digitized procurement data significantly reduced opportunities for collusion and improved competitive tendering. Likewise, Neupane et al. (2014) reported that e-procurement adoption in developing countries led to measurable reductions in corruption risks and transaction inefficiencies. These systems often integrate with open data portals, enhancing cross-sector accountability and creating synergies with broader governance reforms.

However, the effectiveness of DPP in promoting transparency depends on institutional quality, political will, and user capacity (Thai, 2017). In contexts where governance institutions are weak, the technology alone may not overcome entrenched corruption practices (Fazekas & Tóth, 2016). Furthermore, challenges such as data interoperability, cybersecurity, and digital literacy can limit the reach and impact of DPP initiatives, particularly in low-income settings (Pisa et al., 2020).

Recent studies also emphasize the role of international standards and donor-led initiatives in shaping procurement reforms (World Bank, 2020). By aligning national procurement laws with international best practices and embedding transparency-by-design principles, countries can leverage DPP systems not only to improve efficiency but also to reinforce public sector integrity. These insights suggest that while DPP is not a standalone solution, it remains a critical component in comprehensive fiscal transparency strategies.

3. Methods

This study adopts a systematic literature review (SLR) approach to synthesize existing research on digital public procurement and its role in promoting fiscal transparency in various contexts, particularly within emerging and developing economies. The review follows established SLR guidelines to ensure rigor, transparency, and reproducibility in the selection and analysis of literature.

Relevant studies were identified through comprehensive searches in academic databases such as Scopus, Web of Science, and Google Scholar, covering the publication period from 2012 to 2022. Keywords and Boolean operators were used

to capture variations of the main concepts, including "digital public procurement", "e-procurement", "fiscal transparency", "public financial management", and "accountability". Only peer-reviewed journal articles, conference papers, and reputable institutional reports were included, while non-scholarly sources and opinion pieces were excluded.

The screening process involved title, abstract, and full-text reviews to ensure alignment with the research scope. A thematic analysis was applied to identify key patterns, challenges, and emerging opportunities discussed across the literature. Findings were synthesized to highlight common trends and knowledge gaps, forming the basis for the discussion and conclusions of this article.

4. Results and Discussion

The body of empirical and evaluative literature on digital public procurement indicates that e-procurement platforms and open contracting practices can materially improve fiscal transparency, but their effects are conditional and uneven. Across case studies, comparative analyses, and quasi-experimental evaluations, three interlocking domains repeatedly emerge as decisive: technical design and data quality, institutional and governance context, and the capacity of intermediaries and oversight actors to use published data. Technical design matters: platforms that publish machine-readable contract and tender data with rich metadata, standardized identifiers, and regular updates make it feasible to detect anomalies, compare suppliers, and automate "red flag" screening (Ferwerda et al., 2017; Fazekas & Kocsis, 2020). Conversely, fragmented data formats, incomplete coverage of spending, and lack of

interoperability limit the ability of analysts and auditors to track procurement flows across agencies, blunting transparency gains even when portals exist (Ubaldi, 2013; OECD, 2016).

Institutional context substantially conditions outcomes. Where independent audit institutions, active legislatures, and a free press exist, digital procurement records are more likely to translate into concrete oversight, legal follow-up, and corrective policy changes; in such settings, evidence shows reductions in single-bid contracts and improvements in competition metrics (Lewis-Faupel et al., 2016; Bauhr et al., 2020). By contrast, in environments with weak enforcement, political capture, or limited rule of law, e-procurement systems may increase transparency on paper but fail to alter entrenched procurement practices. Studies from transitional and low-capacity contexts highlight cases where digital systems were introduced but key processes (award decisions, contract amendments, off-platform negotiations) remained opaque, enabling actors to "game" the system or shift corrupt practices to non-digital channels (Ameyaw et al., 2012; Fazekas & Tóth, 2016).

The literature also emphasizes the indispensability of intermediaries. Civil society organizations, investigative journalists, and specialized data analysts act as translators and amplifiers: they convert raw procurement records into narratives, policy briefs, and legal cases that can pressure authorities to act (Ferwerda et al., 2017). When such intermediary capacity is lacking, public dashboards and open datasets often generate limited downstream effects. This underscores the importance of capacity building, not only for public officials (on data quality and system

maintenance) but also for external stakeholders (on data literacy and analytical tools) (Ameyaw et al., 2012; Neupane et al., 2014).

Methodological and measurement issues complicate cross-study synthesis. Many evaluations rely on input measures (portal existence, dataset counts) rather than outcome measures (changes in corruption incidence, audit recoveries, or procurement prices). A smaller but growing subset of research uses quasi-experimental designs or red-flag algorithms to infer causal effects on procurement outcomes, demonstrating promising results (Lewis-Faupel et al., 2016; Lyra et al., 2022), but longitudinal and multi-country studies remain comparatively scarce. This heterogeneity in measurement limits comparability and the ability to draw broad causal generalizations about the magnitude of transparency gains.

For policy, the evidence points to clear priorities: design systems with transparency-by-design (machine-readability, standardized schemas, API access); integrate procurement platforms with broader public financial management systems for cross-checking budgets, payments, and contract performance; strengthen legal mandates and enforcement capacity to make data use led to accountability; and invest in intermediary ecosystems and data literacy so published data yield meaningful oversight. In research terms, future work should prioritize longitudinal mixed-methods studies, standardize outcome metrics, and investigate how digital procurement interacts with broader governance reforms across varied political settings. Taken together, the literature suggests that digital public procurement is a powerful enabler of fiscal transparency, but only when technical, institutional, and social prerequisites are attended to in tandem.

5. Conclusion

The findings from this systematic literature review highlight the pivotal role of digital public procurement in enhancing fiscal transparency across emerging economies. By digitizing procurement processes, governments can improve data accessibility, reduce opportunities for corruption, and foster greater public trust. The reviewed literature consistently points to the positive correlation between transparent procurement systems and increased efficiency in public spending, as well as enhanced oversight from civil society and regulatory bodies. The integration of open data standards and real-time monitoring further amplifies these benefits, enabling stakeholders to identify irregularities promptly and ensure that resources are allocated effectively.

However, the successful implementation of digital procurement systems depends on factors such as institutional capacity, political will, and adequate legal frameworks. Without these enabling conditions, technological solutions alone may fail to achieve their intended objectives. The study underscores the importance of pairing digital innovation with governance reforms, stakeholder engagement, and capacity-building initiatives to maximize the impact on fiscal transparency. Future research should explore the long-term effects of these reforms and examine the contextual factors that influence their success in diverse political and economic environments.

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