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Digital Transformation in Vendor Management: A Case Study of E-Governance Initiatives in a Public Sector Undertaking

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Abstract

Digitalization of public procurement has become a central plank of governance reform in India, spanning from the Government e-Marketplace (GeM) to organization-specific vendor portals. This paper examines the pace and pattern of digital transformation in the vendor management practices of a large Maharatna public sector undertaking (PSU) in the energy sector. Adopting a descriptive, case-study-based research design built on secondary organizational data, the study maps the case PSU's transition from manual, paper-intensive procurement toward a hybrid digital ecosystem comprising the Government e-Marketplace (GeM), the Government e-Procurement System (GePNIC), a dedicated online Vendor Invoice Management (VIM) portal, digital contract signing, and virtual pre-bid and tender-opening mechanisms. The study finds a marked rise in GeM-routed procurement value for the case PSU, from approximately Rs. 1,033 crore in FY 2020-21 to Rs. 2,541 crore in FY 2022-23, alongside continuing operational friction- vendors are still required to submit several categories of physically notarized and chartered-accountant-attested documents even after digital bid submission, and upload-size ceilings constrain technical-query responses. The paper describes this PSU's vendor management digitalization as a hybrid transition rather than a complete shift, and it proposes measures, including e-attestation integration and unified digital document repositories, to close the residual manual bottleneck. Implications are drawn for other public sector undertakings pursuing vendor-facing digital transformation.

Keywords: Digital Transformation, Vendor Management, E-Procurement, Public Sector Undertaking, Government e-Marketplace, Vendor Invoice Management

1. Introduction

Public procurement accounts for a substantial share of government and public sector expenditure in India, and its efficiency, transparency and inclusiveness have direct bearing on the ease of doing business for the vendor ecosystem that depends on it. Over the past decade, the Government of India has pursued a sustained programme of procurement digitalization, anchored by the Government e-Marketplace (GeM) and complemented by department- and organization-specific e-procurement systems such as the Government e-Procurement System (GePNIC). Alongside these government-wide platforms, individual public sector undertakings (PSUs) have layered their own digital initiatives onto the vendor interface, ranging from online invoice management to digitally signed contracts and virtual bid meetings.

This paper uses a large Maharatna PSU in the energy sector as a case through which to examine this laye-

red digitalization. Public sector undertakings of this scale periodically conduct Vendor Development Programmes cum Handholding Sessions to acquaint Micro and Small Enterprises (MSEs) and other vendors with their procurement policies, digital tools and evaluation practices.

The objective of this paper is threefold: first, to document the specific digital tools and processes the case PSU has introduced in vendor management; second, to assess, using the organization's own procurement data, the extent to which vendor transactions have migrated to digital channels; and third, to identify the residual manual and paper-based requirements that persist despite this digitalization, and to consider what they imply for the completeness of the transformation. The paper is organized as follows: Section 2 reviews related literature on digital transformation in public procurement; Section 3 describes the research methodology; Section 4 presents findings and discussion organized around the case PSU's specific digital initiatives; Section 5 concludes; and Section 6 notes the limitations of the study and directions for future research.

2. Related Research Work

A substantial body of literature links e-procurement adoption to improvements in transparency, competition and cost efficiency in the public sector. In an early and widely cited study, it is shown that electronic procurement increased competition and quality in public works contracts in India and Indonesia by improving access to tender information and narrowing the scope for corrupt intermediation. Building on this, later work characterizes the evolution of public e-procurement in stages, arguing that a shift from e-procurement 3.0 (largely transactional digitization) toward e-procurement 4.0 (integration of analytics and emerging technologies) is now underway, though most public sector organizations remain in transition between these stages.

Comparative research across European public sector settings has identified organizational, technological and environmental barriers to e-procurement adoption, including legacy IT infrastructure, uneven digital skills among staff and suppliers, and resistance to process change. A systematic review of implementation challenges in public e-procurement similarly finds that technical, organizational and legal barriers recur across jurisdictions, and that supplier-side readiness is as important a determinant of successful adoption as the buyer-side system itself. Directly relevant to the present study, other reviews note that in the Indian context, sequential initiatives such as e-publishing of tenders, standard rate contracts and the Government e-Marketplace have been central to bringing transparency to public buying and to opening participation to a wider vendor base.

Digital transformation is also reported to disproportionately affect smaller suppliers. A review of the challenges facing Small and Medium Enterprises (SMEs) in digitalized public procurement finds that SMEs are frequently underrepresented in digital procurement processes and that technical solutions alone are insufficient without accompanying organizational support, such as training and simplified documentation requirements. This is consistent with findings from a study of e-procurement adoption in Indian PSUs, which reports that digital procurement adoption in this context faces persistent institutional and process-level friction even where the underlying technology is mature, and with related work describing how e-governance reforms, including public procurement portals such as the Central Public Procurement Portal and GeM, have progressively transformed India's public sector buying practices while standardizing timelines and containing administrative cost.

Empirical evidence specific to Indian PSUs further supports the transparency and efficiency case for digital procurement. A descriptive-analytical study using secondary data on eAuction-based e-

procurement in selected Indian PSUs between 2017 and 2025 reports a substantial rise in transparency indices, bidder participation and cost savings following digital adoption, while also noting that institutional preparedness, not technology availability alone, determines the extent of realized gains. Complementing this, macro-level analysis of digitalization in public procurement systems finds that the existing literature remains largely descriptive, with comparatively few studies offering causal estimates of digital tools' impact on procurement outcomes, underscoring a continuing need for organization-level case evidence of the kind this paper seeks to provide.

Taken together, this literature establishes that digital transformation in public procurement is well documented at the level of national platforms and cross-country comparison, but organization-specific case evidence, particularly on how a single Indian PSU's vendor-facing digital tools interact with residual manual requirements, remains comparatively sparse. This paper addresses that gap using a large energy-sector PSU as a case.

3. Research Methodology

This study adopts a descriptive, single-case, qualitative-cum-quantitative research design based on secondary data relating to the case PSU's procurement and vendor management practices. Data were compiled from the organization's procurement statistics, policy circulars and vendor-facing communications, covering annual procurement figures, GeM-routed procurement values across three financial years (FY 2020-21 to FY 2022-23), and unit-level procurement statistics for operations & maintenance and project categories across FY 2021-22 to FY 2023-24 (part year).

The study follows a case-study method appropriate for exploratory, organization-specific analysis of a policy and process phenomenon, supplemented by document analysis of the specific digital tools identified (GeM, GePNIC, an online vendor invoice portal, digital signing, virtual bid meetings) against the public procurement policy framework applicable to Indian PSUs, including the Public Procurement Policy for Micro and Small Enterprises and the Public Procurement (Preference to Make in India) Policy. Quantitative figures relating to the case PSU (procurement values, order counts, GeM shares) are reproduced and tabulated to illustrate migration toward digital channels over time; no statistical inference or hypothesis testing is performed, given the descriptive nature of a single-organization dataset spanning three to five financial years.

The analysis is limited to the digital vendor management dimension of the case PSU's procurement function; it does not extend to internal enterprise resource planning systems, supplier relationship management outside the vendor-facing interface, or procurement categories outside the scope of the data reviewed. As the underlying data originates from a single organization rather than a randomized or multi-organization sample, the findings are illustrative of one PSU's experience rather than statistically generalizable to the Indian PSU sector as a whole; this limitation is discussed further in Section 6.

4. Findings and Discussion

4.1 Migration to Government-Wide Digital Procurement Platforms

The case PSU routes vendor transactions through two government-wide digital platforms: the Government e-Marketplace (GeM), accessible at gem.gov.in, and the Government e-Procurement System, GePNIC, accessible at etenders.gov.in. GeM is used for direct purchase, L1 bidding, reverse auction and PAC purchase of goods and services, while GePNIC is used principally for limited tenders, foreign procurement

and works tenders. The two platforms differ in several operational respects relevant to vendor management, summarized in Table 1.

Feature	GeM Portal	GePNIC Portal
Start dates	Single start date	Two start dates (document sale and bid submission)
Currency	Single currency (INR)	Multiple currencies supported
Limited tenders	Possible only in catalogue bidding; ID cannot be added after hosting	Possible generally; NIC ID can be added post-publication via corrigendum
Zero-bid handling	No automatic due-date extension	Automatic extension of due date
Standard BOQ/SOR	Not available	Available for different procurement types
Bid opening vs. due date	Can be the same date	Minimum one-day gap required

Both platforms embed the government's Micro and Small Enterprise and Make-in-India preference policies directly into the bidding workflow: MSE bidders receive a purchase-preference margin of L1 + 15% and are exempt from Earnest Money Deposit, subject to matching the L1 price, while Class-I local-content suppliers under the Make-in-India policy receive a margin of L1 + 20%. Twenty-five percent of the case PSU's eligible annual procurement is reserved for exclusive procurement from MSEs, with sub-targets of 4% for SC/ST-owned and 3% for women-owned enterprises. These preference mechanisms are administered digitally at the point of bid evaluation on both portals, which is itself a form of digital transformation: policy compliance that once required manual verification is now enforced through system logic at submission and evaluation stage.

4.2 Growth in Digitally-Routed Procurement Value

The case PSU's own procurement data show a clear upward trend in the value of purchases routed through GeM. Table 2 reproduces the organization's GeM procurement value across three financial years, as reported in the source document.

Financial Year	GeM Procurement Value (Rs. in Crores)
FY 2020-21	1,033
FY 2021-22	2,593
FY 2022-23	2,541

GeM-routed procurement value for the case PSU rose from Rs. 1,033 crore in FY 2020-21 to a peak of Rs. 2,593 crore in FY 2021-22, before moderating slightly to Rs. 2,541 crore in FY 2022-23, an overall increase of approximately 146 percent over the three-year period. At the organization's regional unit level, total procurement value (Rs. 8,631 crore in FY 2018-19 to Rs. 11,009 crore in FY 2022-23) shows a broadly similar upward trajectory, with MSE order value rising from Rs. 1,663 crore to Rs. 1,574 crore over the same period, indicating that digital-channel growth has been accompanied by continued, if not proportionally faster, MSE participation. This pattern is broadly consistent with prior Indian PSU-level evidence that digital procurement adoption is associated with rising bidder participation and procurement value routed through transparent digital channels [9], though, consistent with the single-organization scope

of this study, no causal claim is made about the relationship between digitalization and the value growth observed.

4.3 Digital Vendor Invoice Management and Contracting

Beyond bid submission and evaluation, the case PSU has digitalized several downstream vendor-management processes. An online Vendor Invoice Management (VIM) system automates, digitizes and centralizes the accounts payable process; vendors upload digital invoices through a dedicated web portal, which also hosts user manuals, demonstration videos and frequently asked questions to support vendor onboarding. Order transmittal for orders above Rs. 50 lakh, and contract agreements above Rs. 10 lakh, are conducted through an online system, and orders are digitally signed rather than physically executed. General Conditions of Contract (GCC) and General Purchase Conditions (GPC) are similarly hosted on the organization's tender website rather than distributed as physical documents.

Pre-bid meetings and tender openings are conducted through virtual mode, with a physical pre-tender meeting retained only for first-time procurement categories. This selective retention of an in-person step for novel procurement categories suggests a deliberate, risk-calibrated approach to digitalization rather than a uniform digital mandate, consistent with the organizational-support dimension of digital transformation emphasized in the SME-focused literature, which finds that technology alone is insufficient without accompanying process design for less digitally prepared participants [6].

4.4 Residual Manual and Documentation Requirements

Despite this digitalization, the source document identifies a distinct set of recurring bid-evaluation challenges that indicate the transformation remains hybrid rather than complete. Vendors are required to submit several categories of physically notarized and chartered-accountant-attested documents within seven days of the bid due date, including the Integrity Pact, Earnest Money Deposit instruments, Power of Attorney and Line of Credit letters. MSE and Startup certificates require both notarization and chartered-accountant certification; audited financial documents require notarization; and technical Bid Evaluation Criteria (BEC) documents require attestation by a Chartered Engineer or Third-Party Inspection Agency in addition to notarization.

A further constraint arises from upload-size limitations: a vendor may upload up to 10 MB per file across an unrestricted number of files at the bidding stage, but responses to Technical Query (TQ) and Commercial Query (CQ) clarifications are capped at 5 MB across a maximum of four files. Non-receipt of complete tender documents, including corrigenda and replies to pre-bid queries, and non-receipt of proper forms relating to local-content declarations, are also recorded as recurring evaluation difficulties. Taken together, these findings indicate that while the case PSU's vendor-facing transaction layer, bid submission, evaluation logic, invoicing and contracting, has been substantially digitalized, the authentication layer underpinning that transaction layer (notarization, chartered-accountant attestation, physical document courier) has not been digitalized to the same extent. This mirrors the broader finding in the literature that organizational and legal barriers, rather than core transaction technology, are often the binding constraint on completing digital transformation in public procurement [3, 4].

5. Conclusion

This case study of a large Maharatna public sector undertaking's vendor management practices indicates that digital transformation in Indian PSU procurement is well advanced at the transaction layer, evidenced by a 146 percent rise in GeM-routed procurement value over three financial years, a dedicated online Vendor Invoice Management system, online order transmittal and digitally signed contracts, and virtual

pre-bid and tender-opening processes, but remains incomplete at the authentication layer, where physical notarization and chartered-accountant attestation requirements continue to generate the most frequently cited bid-evaluation difficulties. The case PSU's approach is best characterized as a hybrid digital transition: high-value, high-frequency transactional steps have moved online, while lower-frequency but high-friction authentication steps have not. For this PSU and comparable organizations, closing this gap would plausibly require integrating recognized e-attestation or digital notarization mechanisms into the bid submission workflow, establishing a unified digital document repository that vendors populate once and reuse across tenders, and reviewing upload-size ceilings for query responses in light of the volume of supporting documentation modern technical bids require. These measures would extend the efficiency and transparency gains already achieved in bid evaluation and invoicing to the vendor-onboarding and authentication stage of the procurement lifecycle.

6. Limitations and Scope for Future Research

This study is based on a single organization's internally prepared vendor-facing documentation rather than a randomized or multi-PSU sample, and its quantitative findings should be read as illustrative of one PSU's experience rather than as statistically generalizable across the Indian PSU sector. The study also does not incorporate primary data from vendors themselves, such as survey or interview evidence on their experience of the authentication-layer friction identified in Section 4.4. Future research could usefully extend this case-study approach through a comparative multi-PSU analysis, and through primary survey-based research capturing vendor perceptions of digital vendor management systems across PSUs, to test whether the authentication-layer bottleneck identified here recurs across organizations.

7. References

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