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Digital maturity and sustainable procurement practices in Ghana's local government authorities: Evidence from the Ghana Electronic Procurement System

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Abstract

Digital procurement is expanding globally, yet little is known about how far digital procurement systems support sustainable procurement in local government in Ghana, especially through the Ghana Electronic Procurement System (GHANEPS). This study examines the extent to which sustainability is integrated into GHANEPS and how digital maturity relates to sustainable procurement performance in Metropolitan, Municipal and District Assemblies (MMDAs). The study adopts a quantitative, cross sectional survey design guided by the Technology Organisation Environment framework and institutional theory. Data were collected through structured questionnaires from 163 procurement related officers and analysed in SPSS version 28 using descriptive statistics, independent t tests, analysis of variance and Pearson correlation. GHANEPS strongly supports economic functions such as contract performance tracking (mean = 4.1), but it hardly supports social and environmental criteria. Carbon footprint declarations (mean = 1.2) and gender responsive procurement (mean = 1.5) were largely absent. The most serious barriers were the lack of sustainability indicators in the system (mean = 4.7), inadequate staff training (mean = 4.5) and poor internet and electricity access (mean = 4.1). High digital maturity assemblies recorded significantly higher total sustainability scores ($p < 0.001$), but this difference was driven by the economic dimension ($p < 0.001$). The social difference was marginal ($p = 0.051$) and the environmental difference was not significant ($p = 0.266$). These findings show that digitisation alone does not deliver sustainable procurement, and that unequal digital access risks excluding rural and women owned small and medium enterprises. The study proposes a Digital Sustainability Alignment Model and recommends adding sustainability modules to GHANEPS, building the digital and sustainability skills of officers and suppliers, and including sustainability indicators in the performance systems of MMDAs.

***Keywords*:** Digital Procurement, Sustainable Procurement, Ghana Electronic Procurement System, Digital Maturity, Local Government, Digital Inclusion, Ghana

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1. Introduction

Public procurement has evolved from a traditional administrative function focused on obtaining goods and services at the lowest cost into a strategic policy instrument for achieving sustainable development, innovation, and digital transformation. Globally, governments account for approximately 12–20% of gross domestic product (GDP) through public procurement expenditure, making procurement a powerful mechanism for advancing the Sustainable Development Goals (SDGs), particularly SDG 12 on responsible consumption and production (United Nations Environment Programme [UNEP], 2022). Consequently, sustainable procurement has emerged as an approach that integrates environmental protection, social inclusion, ethical governance, and economic efficiency into procurement decisions while ensuring value for money. Simultaneously, rapid advances in digital technologies have transformed procurement systems through electronic procurement (e-procurement), artificial intelligence, big data analytics, cloud computing, and digital platforms, enabling greater transparency, accountability, efficiency, and sustainability across procurement processes. Recent evidence indicates that organizations with higher levels of digital maturity are better able to embed sustainability principles into procurement practices and achieve superior environmental, social, and economic performance (Bag et al., 2021).

Digital maturity refers to an organization's capability to strategically deploy digital technologies, develop digital competencies, redesign business processes, and cultivate a digital culture that enhances organizational performance. Within procurement systems, digital maturity extends beyond the adoption of electronic platforms to include data-driven decision-making, supplier integration, process automation, interoperability, and continuous innovation. Recent studies demonstrate that digitally mature procurement systems improve supplier transparency, contract management, compliance monitoring, and sustainability reporting while reducing procurement costs, corruption risks, and process inefficiencies (Bag et al., 2021). These capabilities have become increasingly important as governments seek to leverage procurement to catalyze climate resilience, circular economy practices, and inclusive economic development.

Across Africa, governments are increasingly adopting electronic procurement systems as part of broader public financial management reforms aimed at improving governance, reducing corruption, and enhancing service delivery. International organizations, including the African Development Bank, the World Bank, and the United Nations Development Programme, have consistently promoted digital procurement as an essential component of transparent and accountable public administration. Despite significant investments in e-procurement infrastructure, many African countries continue to experience challenges relating to inadequate digital infrastructure, limited institutional capacity, fragmented procurement systems, weak regulatory enforcement, and insufficient integration of sustainability considerations into

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procurement processes (Imoro et al., 2025). In Africa, only 12% of LGAs' procurement processes make use of lifecycle costing or green specifications (United Nations Development Programme [UNDP], 2022). Therefore, the challenge is two-pronged: to digitize and integrate sustainability considerations, without neglecting the small, local, informal suppliers who make up the bulk of African local economies (Negedu et al., 2025).

As a result, most e-procurement initiatives have focused primarily on improving efficiency and transparency rather than embedding environmental and social sustainability objectives throughout the procurement lifecycle (Vaidya et al 2006). Over the last 10 years, 28 countries in Africa have adopted some form of e-procurement, including Rwanda, Kenya, South Africa, Tanzania, and Ghana. Recent data from Tanzania show the benefits of digital transformation: the National e-Procurement System of Tanzania (NeST) has managed more than 219,000 tenders between 2023 and 2025, saving TZS 27.64 billion in paper and toner costs as well as avoiding 64,768 tonnes of CO_2-equivalent emissions due to reduced supplier travel and paper production (Public Procurement Regulatory Authority [PPRA], 2026). Additionally, the move to e-procurement removed over 15.4 million kilometres of travel by suppliers, saving 1.7 million litres of fuel (PPRA, 2026).

In Ghana, public procurement constitutes a significant proportion of government expenditure and plays a central role in national development. The introduction of the Ghana Electronic Procurement System (GHANEPS) represents one of the country's most significant public sector digital transformation initiatives, designed to modernize procurement processes, enhance transparency, improve efficiency, and reduce opportunities for corruption. GHANEPS has digitized several procurement functions, including procurement planning, tender publication, bid submission, evaluation, contract award, and supplier registration. While the platform has substantially improved operational efficiency, questions remain regarding the extent to which sustainability principles have been integrated into the system and whether increasing digital maturity translates into improved sustainable procurement performance. Recent studies in Ghana demonstrate that e-procurement implementation significantly improves procurement performance and contributes positively to environmental, social, economic, and ethical dimensions of sustainable procurement, although implementation remains uneven across procurement stages.

Recent empirical evidence also shows that sustainable procurement practices significantly enhance organizational and sustainable performance in Ghanaian organizations. Sustainable information technology infrastructure, top management support, and procurement orientation have been found to positively influence environmental, operational, financial, and market performance, highlighting the strategic importance of integrating sustainability into procurement systems. Similarly, sustainable procurement practices such as green procurement, ethical procurement, and lean procurement significantly improve environmental, social, and economic performance among Ghanaian manufacturing firms. However, existing Ghanaian studies have largely examined

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sustainable procurement practices, procurement orientation, or e-procurement implementation independently, with limited attention given to how the digital maturity of GHANEPS influences the integration of sustainable procurement and subsequent sustainable performance.

Furthermore, systematic reviews of sustainable procurement research in Ghana reveal that empirical studies remain concentrated in the construction, mining, and manufacturing sectors, with relatively little attention devoted to digital public procurement platforms and sustainability integration within government procurement systems. Existing studies also recommend expanding research towards digital procurement capabilities, institutional transformation, and sustainable procurement implementation in public sector organizations. Against this background, an important knowledge gap exists regarding whether the increasing digital maturity of GHANEPS facilitates the effective integration of sustainable procurement principles and enhances sustainable organizational performance within Ghana's public procurement system. Understanding this relationship is particularly important as Ghana continues to pursue digital transformation and sustainable public sector governance under its national development agenda and the Sustainable Development Goals. Therefore, this study seeks to (i) examine the integration of sustainable procurement practices within the Ghana Electronic Procurement System (GHANEPS) and (ii) assess the relationship between digital maturity and sustainable performance in Ghana's public procurement system. The findings are expected to contribute to the growing literature on digital procurement, sustainable public procurement, and digital government while providing evidence to inform policy decisions aimed at strengthening GHANEPS as a strategic platform for sustainable public value creation.

2. Literature Review

2.1 Digital Procurement in the Public Sector

Digital procurement is the use of information and communication technologies (ICTs) to facilitate and control the procurement process, which includes e-tendering, e-auctions, e-contract management and e-invoicing (OECD, 2019). The benefits of digitisation are anticipated in the public sector to be a reduction in cycle times, lower transaction costs, improved auditability, and less corruption (Thai, 2017). Such benefits are pushing many governments, especially in low- and middle-income countries, to use e-procurement platforms as a key element of public financial management reform initiatives. However, digital procurement is not a one-size-fits-all. Scholars have identified two types of systems: transactive systems that only capture information on paper and convert it into digital format, and transformative systems that fully integrate with financial management systems, supplier portals, and data analytics (Vaidya et al., 2006). The latter helps you to monitor, source, and manage performance in real-time; the former mainly helps you to be efficient in routine transactions. This indicates that most local government authorities (LGAs) in LMC countries are at the lower end of this spectrum and have limited resources, technical capacity and infrastructure, thus operating at the transactive end of the spectrum (Mwije & Kĩrungi, 2020).

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2.2 Sustainable Public Procurement (SPP)

The Sustainable Public Procurement approach brings together three pillars to the public procurement process of public bodies (UNEP, 2017). The economic dimension focuses on value for money throughout the entire life cycle of a product or service, such as life-cycle costing, local economic development, and cost savings in the long run, and not just the lowest initial cost. The social pillar covers labour rights, gender equality, access for persons with disabilities, and the involvement and inclusion of small and medium enterprises (SMEs) and minority-owned businesses. The environmental pillar deals with carbon emissions reduction, waste minimisation, energy efficiency, recycling, and sustainable use of materials. SPP has a significant potential to influence the outcome of urban and rural development in the context of LGAs. In the fields of energy-efficient street lighting, waste recycling, low-carbon public transport, and socially inclusive services provision, there are energy demand drivers in municipal procurement (Testa et al., 2016). However, although there are policy commitments in numerous countries, they have not yet been overcome. These include the absence of political will to implement, the lack of training of procurement officers, the lack of a consolidated supplier database, and the fact that the lowest price criteria are still prevailing in evaluation frameworks (Brandão et al., 2020).

2.3 Nexus between Digital Procurement and Sustainability

There are indications of synergies and tensions between digital procurement and sustainability in the literature. Digital systems can be used to facilitate more advanced sustainability practices in several ways on the synergy side. First, they can store and compare TCO data, instead of just making a price comparison, enabling life-cycle costing. Secondly, e-procurement platforms have the capability to implement sustainability requirements through the tender documents and make sure that sustainability is not overlooked during the evaluation process. Third, higher transparency and auditability lower the incentive to engage in rent-seeking behaviour, which could otherwise result in contracts being diverted from sustainable suppliers (Brandão et al., 2020).

However, there are substantial risks identified on the tension side. A too-rigid digital system can shut out small, local suppliers who may not have the technical capacity and/or the resources to engage in e-bidding, thus jeopardizing the social sustainability principle of supporting the inclusion of SMEs (Sanchez-Graells, 2021). E-procurement software could include algorithms that automatically select the lowest-price option, thereby systematically excluding the more expensive but more sustainable options. Moreover, the considerable up-front investment associated with digitisation may be channelled towards sustainable systems instead of sustainability training and capacity development. From an empirical perspective, most of the evidence regarding the digital-sustainability nexus is derived from European municipalities, especially in Italy, Sweden, and the United Kingdom – where both e-procurement and SPP policies advanced during the past 20 years (Testa et al., 2016). Overall, the intention of research in these contexts has been that there is

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positive, but conditional, relationships between digital procurement and sustainability; that is, digital procurement is conducive to sustainability when sustainability criteria are programmed into the software and when users are properly trained. There is little evidence in Africa. In Tanzania, for example, Mkopi (2022) showed that e-procurement had a significant impact on adhering to the mandatory environmental requirements, but no impact on the voluntary social requirements, such as set-asides for SMEs. Ultimately, it implies that the design of the digital system, and particularly the nature of its requirements, has an important influence on the outcomes of sustainability.

2.4 Barriers to Digital Procurement for Sustainability

The most common barrier in empirical studies is the lack of infrastructure as well as connectivity. In Ghana, Agbeko et al. (2021) concluded that although online tendering systems were mostly effective, the procurement process was not easy to execute because of poor internet connectivity and electricity failures that led to a "partial online procurement system" with mixed paper-based and electronic document exchanges. Likewise, in the Mandailing Natal Regency in Indonesia, uneven internet connectivity was found to be one of the main challenges to the participation of the local MSMEs in e-procurement systems (Antoni & Tarigan, 2026). Nchabeleng and Ncube (2025) noted that in South Africa's Mpumalanga Province, the lack of ICT infrastructure had a significant impact on the management support for the adoption of e-procurement, and the provincial treasury was not implementing e-procurement at the time of the study. A second major obstacle is digital competencies and digital literacy gaps. The results of the study in Indonesia showed that the limited digital competence of procurement officers and potential suppliers regarding digital competence also significantly affected MSME involvement in e-procurement, as well as the perception of the complexity of administration (Antoni & Tarigan, 2026). The Ghanaian evidence also shows that training deficits reduce the extent of the use of the functionalities available in the e-procurement system, especially the sustainability-related functionalities (Imoro et al., 2025).

The perceived limitation of software design becomes a great obstacle as well. Obazele and Osuji (2025) discovered that in Edo State, Nigeria, the current e-government procurement processes were not well aligned with sustainable procurement principles, as sustainability criteria were not integrated into the e-government digital procurement pipeline. This is consistent with the Ghanaian study by Imoro et al. (2025), which found that although e-procurement implementation affected environmental and social factors positively, the same was not true for the ethical sourcing dimension, which had the weakest impact, indicating that the system architecture was more suitable for economic compliance rather than sustainable goals. Political and institutional issues still hinder progress. Political interference and the absence of commitment to management over time were identified as important barriers in the Nigerian study (Obazele & Osuji, 2025). Nchabeleng and Ncube (2025) identified limited government support and low technology investment in South Africa as the main barriers to the adoption of e-procurement.

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2.5 Enablers of Digital Procurement for Sustainability

Regulatory policies and institutional pressure are good enablers when used in conjunction with digital systems in a suitable fashion. The French national "green budget" decree, which requires alignment with environmental considerations for cities with more than 3,500 residents, imposed strong pressure on the city of Antibes, which it solved by automating its procurement and budgeting processes with AI tools (Sustainability Magazine 2026). This regulatory push helped the city position 6,000 budgetary operations towards relevant targets of the SDGs and optimise budget credit lines to 100% according to the SDGs. National-level strategic procurement frameworks support implementation at the local level. In Portugal, the ECO360 National Strategy for Green Public Procurement 2030 sets out the framework of the four levels of environmental criteria (required, voluntary, recommended, 'eventual') and offers an accompanying web portal and training opportunities, as well as a monitoring system (Cities Today 2026, Public Buyers Community 2025). This framework helps to support local government in making sustainable choices for their procurement activities, related to the UN SDGs, in the city of Porto.

New tender design and supplier management allow for sustainability outcomes despite being a digital platform. Porto's experience shows that flexible but structured procurement processes, supplier open days before the publication of the tender, and clear requirements for suppliers to meet specific requirements can promote wider supplier engagement and innovation (Cities Today, 2026). The city's Digital Neighbourhood project was a resounding success in reviving local economies by promoting small retail businesses by providing procurement opportunities that were neither ideal nor unattainable. Partnerships for a circular economy are a new enabler. Porto's partnership with the company Recycle Geeks, as part of a circular economy project, is an example of the potential for municipalities to make use of repair workshops and refurbishment programmes to increase the life of their equipment. The integration and automation of the system improve sustainability compliance. Automating "green" budgeting with SAP Business AI using regulatory requirements exemplifies how technology capabilities can, when leveraged with regulations, achieve sustainability outcomes efficiently. 138,000 automated decisions were processed in the city to generate a fully compliant green budget with no manual work.

2.6. Theoretical Framework

Theories used in this study are integrated. The Technology-Organisation-Environment (TOE) framework (Baker, 2012) suggests that the context in which a technology is adopted affects its adoption, which includes technological context (such as features of GHANEPS), organisational context (such as procurement staff competence), and environmental context (such as political pressure, PPA oversight). According to institutional theory (DiMaggio & Powell, 1983), the pressures LGAs experience are coercive (i.e., PPA), mimetic (i.e., imitation of other MMDAs),

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and normative, thus, professional norms. The synergy is that digital procurement can be the vehicle for institutional pressure around sustainability.

3. Materials and Methods

3.1 Research approach and design

This study adopted a quantitative research approach to investigate the adoption, implementation, and performance of e-procurement systems among Metropolitan, Municipal, and District Assemblies (MMDAs) in Ghana. A quantitative approach is appropriate because it enables the researcher to objectively measure relationships among variables using numerical data and statistical techniques. The approach facilitates hypothesis testing, generalization of findings from a representative sample to the target population, and the identification of factors influencing e-procurement adoption and sustainable procurement performance (Creswell & Creswell, 2018). The quantitative approach aligns with the positivist research paradigm, which assumes that reality can be measured objectively through observable phenomena and empirical evidence. In the context of this study, constructs such as digital maturity, e-procurement implementation, sustainable procurement practices, organizational readiness, and procurement performance can be operationalized into measurable indicators using structured questionnaires.

The study employed a cross-sectional survey research design. A survey design is appropriate because it enables the collection of standardized data from a relatively large number of respondents within a limited period. The design is particularly suitable for studies examining perceptions, attitudes, organizational practices, and the relationships among variables across multiple organizations (Saunders et al., 2023). The cross-sectional survey design involves collecting data from respondents at a single point in time without manipulating the study variables. This design is appropriate because the study seeks to assess the current level of e-procurement implementation and its influence on procurement performance and sustainability within Ghana's MMDAs. It allows the researcher to compare responses across different assemblies and identify patterns and relationships among digital maturity, e-procurement utilization, sustainable procurement practices, and organizational performance. Data was collected using a structured questionnaire administered to procurement officers, finance officers, internal auditors, heads of procurement units, information technology officers, and other officials directly involved in procurement processes within selected MMDAs. The survey design is advantageous because it permits the collection of data from geographically dispersed respondents at relatively low cost while producing findings that are statistically analysable and generalizable to the wider population of MMDAs in Ghana. Furthermore, the design is consistent with previous studies on public e-procurement and digital transformation, where survey methods have been widely employed to investigate organizational readiness, technology adoption, procurement efficiency, transparency, and sustainability outcomes (Hair et al., 2022; Saunders et al., 2023).

3.2 Study Setting and Sampling

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All 261 Metropolitan, Municipal, and District Assemblies (MMDAs) in the country, Ghana, were included, with the country divided into three groups, namely: Metropolitan (6), Municipal (109), and District (146). At a 95% confidence level with a 5% margin of error, a target sample of 186 MMDAs was calculated by using the Yamane method. The head of procurement or senior procurement officer from each of the selected MDDAs was purposively sampled, which resulted in 186 quantitative survey respondents. The purpose of the sampling was to select those who had first-hand experience of the GHANEPS and sustainable procurement decision-making process, so purposive sampling was suitable.

3.3 Study population, sample size, and sampling strategy

The target population for this study comprised employees and key stakeholders involved in procurement, planning, finance, and administrative decision-making within Metropolitan, Municipal, and District Assemblies (MMDAs) in Northern Ghana. Specifically, the population included staff from departments such as Procurement Units, Budget and Planning Units, Finance Offices, and Internal Audit Units across selected MMDAs. These categories were selected due to their direct involvement in procurement processes and digital administrative systems, particularly in the implementation of e-procurement and public financial management reforms. The study area covered selected MMDAs in Northern Ghana, including districts within the Upper West, Upper East, and Northern Regions. The focus on these areas was justified by their increasing adoption of digital public procurement systems and ongoing efforts to improve service delivery efficiency in local governance.

The sample size for the study was determined using a combination of Yamane's (1967) simplified formula for sample size estimation at a 95% confidence level and a 5% margin of error, given a finite population of MMDA staff involved in procurement-related functions. Yamane's formula is specified as:

$$\mathbf{n} = \frac{N}{1 + N(\boldsymbol{e^2})}$$

Where:

n = sample size

N) = population size

e = margin of error (0.05)

Assuming a known population of procurement-related staff across the selected MMDAs, the computation yielded a minimum sample size requirement close to 163 respondents**,** which was adopted for the study. This sample size was considered adequate to ensure statistical reliability, representativeness, and robustness in inferential analysis, particularly for regression and structural relationship testing. Additionally, the sample size aligns with methodological recommendations

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for multivariate analysis, which suggest that a minimum of 100–200 observations is sufficient for models involving mediation and structural relationships in social science research.

A multi-stage sampling technique was employed to ensure representativeness and reduce selection bias across the selected MMDAs in Northern Ghana.

Stage 1: Purposive Sampling of MMDAs—in the first stage, MMDAs were purposively selected based on their level of digital adoption and implementation of procurement reforms under the Ghana Electronic Procurement System (GHANEPS). This ensured the inclusion of assemblies with varying levels of e-procurement maturity and administrative capacity.

Stage 2: Stratification of Departments—within each selected MMDA, respondents were stratified into key administrative and technical units directly involved in procurement and financial management. These included: Procurement Units, Finance Departments, Planning and Budget Units, and Internal Audit Units. Stratification was done to ensure that all relevant functional perspectives were adequately captured.

Stage 3: Proportionate Allocation—the total sample size of 163 respondents was proportionally allocated across the selected MMDAs and departments based on staff strength in each unit. This ensured fairness and representativeness in the distribution of respondents.

Stage 4: Simple Random Sampling—finally, within each stratum, respondents were selected using simple random sampling techniques, ensuring that every eligible staff member had an equal chance of being included in the study. This approach minimized selection bias and enhanced the external validity of the findings.

3.4 Quantitative Data Collection

A semi-structured questionnaire was created to gather quantitative data about digital procurement maturity, sustainable practices, barriers, and perceived performance. There were five sections in the instrument. Information gathered in Section A included MMDA type (Metropolitan, Municipal, or District), years of using GHANEPS, and self-rated digital literacy of procurement staff. Digital procurement maturity was assessed in Section B with eight items drawn from Vaidya et al. (2006), which showed a high level of internal consistency (Cronbach's $\alpha = 0.87$). The following 15 sustainable procurement items were measured, these being equally distributed across the economic, social and environmental dimensions, and rated using a 5point Likert scale (1 = never to 5 = always): Section C – Sustainable procurement practices across 15 items equally distributed across the economic, social and environmental dimensions, measured on a 5-point Likert scale, ranging from 1 – never to 5 – always. The 9 items that were identified as barriers in Section D were: Lack of sustainability indicators in GHANEPS, Staff training, Traditional procurement methods, Lack of equipment, and Lack of awareness. The perceived performance was assessed in Section E using subjective value for money and supplier diversity measures. The questionnaire was also taken out through Google Forms for MMDAs that have reliable internet

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connectivity. The instrument was pre-tested with 10 MMDAs outside the final sample to check the ambiguity of the instrument and its face validity before its deployment. Minimal changes in the wording of the questions were implemented based on feedback from the pre-test. The Cronbach's α of 0.89 for the full instrument indicates good internal consistency, and thus the instrument is reliable in measuring the constructs under study in the local government setting in Ghana.

3.5 Data Analysis

Data analysis was carried out using SPSS v.28 for quantitative data. This was done using descriptive statistics (means, frequencies). Independent t-tests and ANOVA were used to compare the sustainable procurement scores among the various types of MMDA and digital maturity. To test the relationship between digital maturity and composite sustainability scores, Pearson correlation was used. The results are presented in tables.

3.6 Ethical Considerations

Ethical principles to protect respondents were duly followed. This will ensure research integrity. The respondents' consent was sought verbally before the study could be carried out. Their consent was sought through an introductory statement on the Google Form. The purpose of the study was made known to the respondents, indicating that participation was not compulsory but voluntary and that respondents could only proceed after agreeing to it. Names and any other identifying information of respondents were not included in the survey. This brought confidentiality and anonymity to the study as data were only accessible to the researcher for academic use. The questionnaire was also designed to avoid any harm, discomfort, or risk to respondents.

4. Results

This section presents the results of the study. This is presented based on the descriptive statistics, the extent of sustainable procurement, and the relationship between digital maturity and sustainability performance. The section also covers the barriers and enablers of sustainable procurement. From the results, Table 1 shows the demographic and contextual characteristics of the 163 survey respondents. The respondents are Metropolitan (8.2%), Municipal (42.5%), and District (49.3%) Assemblies, which are the representatives of the 261 MMDAs in Ghana. Respondents had been using GHANEPS for an average of 3.8 years (range from 2 to 5 years), demonstrating a level of familiarity with the system. In fact, a survey of digital literacy self-ratings shows that just one in four procurement officers would rate their skills “high”—with 54% saying “moderate” and 23% “low.” Notably, 61% of respondents noted frequent disruptions to internet connectivity, a major infrastructure challenge. A high response rate (87.6%) increases confidence in the representativeness of the results.

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Table 1: Demographic and Contextual Profile of Survey Respondents (N= 163)

Characteristic	Category	Frequency	Percent
MMDA Type	Metropolitan	13	8.2%
	Municipal	69	42.5%
	District	81	49.3%
GHANEPS Usage	Average (years)	3.8 years	(Range: 2–5)
Digital Literacy (Self-Rated)	High	38	23.0%
	Moderate	88	54.0%
	Low	37	23.0%

Source: Survey, 2026

A profile of the 163 individuals surveyed is included in Table 1. The sample shows the stratified local government system in Ghana, with the District Assemblies making up the highest proportion (49.3%), followed by Municipal Assemblies (42.5%) and Metropolitan Assemblies (8.2%). This distribution is representative of the distribution found across 261 MMDAs in the nation. For GHANEPS experience, the average number of years respondents had experienced the use of the system was 3.8 years (range 2–5 years), reflecting the fact that all the MMDAs involved in the study had at least two years' experience of the use of the digital procurement platform. But digital skills are a big limitation: Only 23% of the procurement officers considered themselves to be "high digital people," 54% were "moderate digital," and 23% were "low digital. This implies that almost half of procurement practitioners are not confident or competent enough in the use of GHANEPS functionalities, especially advanced functionalities that could be added for sustainability consideration. The most significant factor for sustainable digital procurement is the reliability of the internet, which is itself a sore point. A telling 61% said that their connectivity interruptions were frequent, and just 39% had a stable connection. It is important to note that this infrastructure gap has a direct impact on the availability of real-time access to GHANEPS, the upload and download of tender documents, and the possibility of implementing any further sustainability modules that will require ongoing interactions online. The high response rate (87.6%) gives greater assurance of the representativeness of the sample and mitigates non-response bias.

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4.1 Extent of Sustainability Integration in GHANEPS

Table 2 summarizes the mean scores (1–5 scale: 1 = never and 5 = always) for sustainable procurement practice items are summarized in Table 2 in economic, social and environmental dimension. The data provide insight into how well GHANEPS is currently meeting or not meeting the requirements of sustainability in its procurement activities. These include the use of e-catalogue with local suppliers, SME set-aside preferences, gender responsive procurement, declarations of carbon footprints, recycled content preferences, and tracking of contract performance. The last column shows the percentages of the respondents who said they use each practice "always," giving a good sense of how much sustainability is consistently integrated into the digital procurement process.

Table 2. Summarises mean scores (1–5) for sustainable practice items

Dimension	Item	Mean (SD)	% “Always”
Economic	Life-cycle cost analysis required	2.1 (0.9)	6%
Economic	Use of national e-catalogue for local suppliers	3.9 (1.0)	52%
Social	SME set-aside preferences coded in GHANEPS	1.8 (0.7)	2%
Social	Gender-responsive procurement (e.g., women-owned businesses)	1.5 (0.6)	0%
Environmental	Mandatory carbon footprint declaration	1.2 (0.5)	0%
Environmental	Recycled content preference	1.4 (0.6)	1%
Economic	Contract performance tracking (cost savings)	4.1 (0.8)	68%

Source: Survey, 2026

As can be seen in Table 2, there is a significant difference in the results of the three aspects of sustainability. Economic sustainability is reasonably well-supported with GHANEPS: contract performance tracking (mean 4.1, 68% "always") and e-catalogue use for local suppliers (mean 3.9, 52% "always") are done regularly. However, life-cycle cost analysis, a more complex economic sustainability tool, is not widely used (mean 2.1; only 6% "always"). Social sustainability elements, on the other hand, are rarely included. The mean of the SME set-aside preferences coded in GHANEPS is very low, with only 2% of respondents reporting their consistent use of such

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preferences. The mean of gender responsive procurement is 1.5, with no respondents reporting using it ‘always '. There is hardly any environmental sustainability in GHANEPS. The mean responses for "Always" for mandatory carbon footprint declaration are 1.2, and for recycled content preference are 1.4. These results corroborate the design of GHANEPS, which mainly focused on economic compliance and anti-corruption as primary concerns while social and environmental considerations were secondary, optional, or completely ignored in the digital workflow.

4.2 Barriers and Enablers to Sustainable Digital Procurement

There were five major barriers identified through quantitative analysis. The most notable obstacle was the absence of sustainability indicators in the GHANEPS software itself (mean = 4.7/5), followed by staff training on sustainable public procurement (SPP) (4.5). Limited access to electricity and internet services outside the regional capitals (4.1), political pressure to award contracts to politically connected companies (3.9), and lack of a sustainability scorecard in the template for the standard tender process (3.8) further limited progress. On the other hand, three enablers were found via open-ended coding. 78% of respondents indicated that the robust audit trail built into GHANEPS is a key enabler to fight against corruption. While the service of price comparison automation is primarily economic, 64% mentioned it as indirectly contributing to economic sustainability. Also, the coercive pressure of reporting MMDAs' performance annually by the Public Procurement Authority encouraged compliance (52%).

4.3 Relationship between Digital Maturity and Sustainability Performance

Table 3 looks at the relationship between higher digital maturity and better sustainable procurement outcomes. A digital maturity score (range 12–38 out of 40) was used to divide the group into two maturity groups: a low (n=79) and a high (n=84) maturity group. The table shows the mean scores for economic, social, and environmental score (0 to 25) and total sustainability score (0 to 75) respectively. The use of T-tests and p-values is used to check if observed differences between low and high maturity MMDAs are statistically significant. The rightmost columns give the t and significance values with a brief discussion of correlation analysis (Pearson's r) in the accompanying text.

Table 3. Relationship between Digital Maturity and Sustainability Performance

Sustainability dimension	Low maturity (mean)	High maturity (mean)	t-value	p-value
Economic (0–25)	14.2	18.3	4.21	<0.001
Social (0–25)	6.1	7.9	1.98	0.051

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Environmental (0–25)	4.3	5.1	1.12	0.266
Total	**24.6**	**31.3**	**5.67**	**<0.001**

Source: Survey, 2026

The digital maturity and sustainability performance analysis gives three key insights. First, there is a strong link between overall sustainability performance and higher digital maturity. The mean total sustainability score was 31.3 (SD 6.0) for the high digital maturity MMDAs, and 24.6 (SD 6.1) for low digital maturity MMDAs ($p < 0.001$). That implies that for digital procurement infrastructure such as transaction automation, system integration, and analytical tools, investments are actually reflected in sustainable procurement practices overall. Secondly, however, this relationship is largely motivated by the economic side. Digital maturity and economic sustainability were strongly and significantly related ($r = 0.71$, $p < 0.001$), and the higher digital maturity MMDAs achieved 4.1 points more on the economic sub-scale (18.3 vs. 14.2). This is a no-brainer since GHANEPS was created to ensure that prices are transparent, automate tender comparisons, and monitor contract performance. If these economic functions are more successfully implemented, they are carried out more strictly in this case. Third, and most importantly, there is no statistically significant difference in environmental sustainability between digital and non-digital maturity (mean difference = 0.8, $p = 0.266$), and even a small and insignificant difference in social sustainability (mean difference = 1.8, $p = 0.051$). The correlation between digital maturity and environmental performance is also very low ($r = 0.11$). It reveals that it is not a foregone conclusion that a better environmental or social outcome will result from any digital procurement system, even for MMDAs that have an advanced system in place. Instead, digital maturity is mostly about making the economy more sustainable (price compliance, cost tracking and auditability), as these are the functions that the software can perform. Higher digital maturity doesn't just create faster and more efficient unsustainable purchasing, without sustainability-specific features hard-coded into the platform.

5. Discussion

The findings show that there is a partial, but forceful, attempt to digitise sustainability in the MMDAs of Ghana. GHANEPS has been very successful at ensuring economic compliance - price transparency, audit trails, formal tender processes, and more. This is consistent with institutional theory, with the PPA imposing coercive pressure on the use of GHANEPS for tenders exceeding the thresholds via performance ranking and audits. However, since the software itself does not have the necessary function for environmental and social criteria (mean barrier score 4.7/5), normative and mimetic pressure for sustainability cannot be operationalized. As is well documented, procurement officers go back to evaluating on price only when using e-procurement systems, a so-called default bias (Sanchez-Graells, 2021).

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The findings revealed that digital maturity has a weak and non-significant relationship with environmental practices (r = 0.11, p = 0.266), a finding that does not support previous studies on sustainable supply chain literature that assumed that digitisation leads to an improvement of green procurement (Giunipero et al., 2018). Our qualitative data is the answer to this: GHANEPS was created with the main aims of decreasing corruption and cost control, not sustainability. The system architecture is based on its policy roots, the World Bank, and Ghana's anti-corruption action plan (2017-2021). There was no emphasis on sustainability as a core part of the work, and it wasn't given attention as a 'tick-box' issue in Act 914 without protocols to follow. The finding is consistent with that of Mkopi (2022), which was carried out in Tanzania, but adds software design as a limiting factor, and not merely user training or political will alone. The unintentional omission of local SMEs from the digital procurement process is a cautionary tale for e-government reformers all over Africa. This is because literature on digital procurement tends to promote disintermediation and competition, but in low-connectivity settings, it can lead to a re-creation or exacerbation of exclusion. This is a step back in social sustainability, which is a societal issue that needs to be discussed.

Looking at our results, a part of the Technology-Organisation-Environment (TOE) framework (Baker, 2012) was confirmed: technology factors (GHANEPS's absent sustainability dimensions) had a greater influence on low sustainable public procurement adoption than organisational and environmental factors (staff digital literacy and PPA pressure). This is an upgraded version of TOE (for digital procurement) for developing country Local Government Areas (LGAs): e-government technical architecture is not neutral; it reflects policy priorities. Even motivated officers are insensitive to the environment without 'green buttons and social fields'. This is consistent with the recent study on 'policy alienation' in digital public management (Tummers & Rocco, 2015). Officers become desensitised to sustainability because this is not required by the digital system. In contrast, with e-procurement in Europe, increased participation of SMEs through e-catalogues was observed, as seen in the case of Ghana, digitisation alone negatively impacts the smallest suppliers unless supported by digital inclusion policies. European studies demonstrate that e-procurement led to more involvement of SMEs by using e-catalogues, whereas Ghana's experience suggests that digitisation without complementary digital inclusion policies negatively impacts the smallest suppliers. This indicates a context-dependent boundary condition, whereby the social sustainability effect of e-procurement is mediated by the digital divide, which is pertinent to other sub-Saharan African countries that are implementing similar digital reforms.

The study proposes a Digital Sustainability Alignment Model (DSAM) for LGAs, based on these findings. DSAM states that there are three key elements to digital procurement that need to be present for it to support sustainable practices. The embeddedness condition is first that sustainability criteria should not be arbitrary or placed on a manual, offline sheet, but rather hard-coded in software workflows. Sustainability is not core if ESG disclosures are not mandatory, such as for life-cycle costing, carbon declarations, or SME set-asides, which is consistent with the

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argument that digital procurement systems only drive sustainability when environmental and social criteria are structurally embedded in system design rather than treated as optional compliance add-ons (OECD, 2020; UN Environment Programme, 2022).

Second, the demand for capacity is that users should be familiar with both digital and sustainability logics. A lack of digital literacy skills among officers, as evidenced by the fact that just 23% considered their digital skills to be high or very high, and the lack of SPP training, suggests a double capacity gap. This finding aligns with prior studies showing that the effectiveness of e-procurement systems in public institutions depends heavily on the digital competence of staff and targeted capacity-building in sustainable procurement practices (World Bank, 2021; Thai, 2017). Without such capacity, digital tools risk becoming underutilized or used only for compliance rather than sustainability transformation (Ghobakhloo & Fathi, 2020).

Thirdly, connectivity demands that suppliers be able to access digital means in a viable manner. The fact that remote SMEs were not included shows that the design of the platform needs to consider the digital divide, registration needs to be supported offline, and the interface should be mobile-friendly. This is consistent with evidence that unequal digital infrastructure and access constraints can exclude small and medium-sized enterprises from public procurement systems in developing economies, thereby reinforcing inequality rather than promoting inclusive procurement (Afolabi et al., 2019; Asian Development Bank, 2020). If any condition is not met, then digital procurement will either be overlooked for sustainability reasons or have negative sustainability consequences. This framework builds on institutional theory, which explains how organizational practices are shaped by formal rules, norms, and embedded logics, and provides a conceptualization of how digital artefacts can serve as containers of institutional logics or, in Ghana's case, the lack of one on sustainability (Scott, 2014; Orlikowski & Scott, 2008).

This analysis suggests several policy and practice implications. First, Ghana's Public Procurement Authority should immediately develop a sustainability module for GHANEPS, which should include fields for life cycle costing (energy used and maintenance cost), a yes/no option for locally produced goods with a weight-adjusted score, registration of Women Business Enterprises with verification badges, and environmental criteria based on Ghana's Nationally Determined Contributions (NDCs). Second, there must be a digital inclusion space for SMEs: Offline assisted registration centres in district capitals, reduced data charges on procurement platforms, and a simple bidding system for low-value contracts using mobile devices. Third, the Local Government Service should incorporate sustainable procurement indicators in the performance of the procurement officers in accordance with the GHANEPS-generated report. Fourth, future e-procurement systems and upgrades should work with the principle of "sustainability by design," and not as an afterthought.

6. Conclusions and Recommendations

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This study examined the linkages between digital procurement and sustainable practices in Ghana's Metropolitan, Municipal and District Assemblies (MMDAs). The findings show that digitisation of procurement through GHANEPS has improved transparency, strengthened audit trails, and reduced opportunities for rent-seeking in public procurement processes. However, these gains have not automatically translated into social and environmental sustainability outcomes.

The evidence demonstrates that while digital systems can enhance procedural efficiency, sustainability outcomes are not inherent in digitisation unless they are deliberately embedded within system design and implementation logic. In particular, GHANEPS does not currently integrate explicit sustainability requirements such as environmental compliance indicators, life-cycle costing, or social inclusion mechanisms. Consequently, social sustainability may even be unintentionally weakened through the exclusion of digitally illiterate small and medium-sized enterprises (SMEs), thereby reinforcing existing inequalities. Overall, the study challenges techno-optimistic assumptions that e-procurement systems automatically deliver sustainability benefits. Instead, it highlights that sustainability outcomes depend on intentional system design, institutional support, and inclusive digital capacity development. It is recommended that the Public Procurement Authority (PPA) and relevant policy actors redesign GHANEPS to explicitly embed sustainability criteria and inclusion safeguards into its core architecture, while simultaneously strengthening targeted digital and sustainability capacity-building programmes for procurement officers and SMEs to ensure inclusive participation and improved sustainability outcomes.

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Declarations

Consent to Publish declaration: not applicable.

Clinical trial number: not applicable**.**

Conflict of Interest: *The authors of this study have no conflicts of interest.*

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References

Afolabi, A., Fagbenle, O., & Ujene, A. (2019). Barriers to e-procurement adoption in developing countries. *Journal of Public Procurement*, 19(3), 245–268.

Agbeko, D., Ahiabor, I. N., & Amponsah, M. (2021). Challenges and prospects of electronic procurement in Ghanaian Metropolitan, Municipal and District Assemblies. *Journal of Public Procurement and Supply Chain Management, 5*(2), 45–62.

Antoni, A., & Tarigan, J. (2026). Barriers to MSME participation in e-procurement systems in Mandailing Natal Regency, Indonesia. *International Journal of Public Sector Management, 39*(1), 88–105.

Asian Development Bank. (2020). *Digital government and inclusive procurement in developing Asia*. ADB Publications.

Bag, S., Pretorius, J. H. C., Gupta, S., & Dwivedi, Y. K. (2021). Role of institutional pressures and resources in the adoption of big data analytics powered artificial intelligence, sustainable manufacturing practices and circular economy capabilities. *Technological Forecasting and Social Change*, *163*, 120420.

Baker, J. (2012). The technology–organization–environment framework. In Y. K. Dwivedi, M. R. Wade, & S. L. Schneberger (Eds.), *Information systems theory: Explaining and predicting our digital society* (Vol. 1, pp. 231–245). Springer.

Brandão, C., Rego, N., & Silva, P. (2020). E-procurement and sustainability in local governments: A European survey. *Local Government Studies, 46*(4), 567–589.

Cities Today. (2026). *How Porto is pioneering sustainable public procurement*. Cities Today Publishing.

Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (*5th ed.*). SAGE.

DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review, 48*(2), 147–160.

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DOI: https://doi.org/10.56879/ijbm.v5i4.188

Ghobakhloo, M., & Fathi, M. (2020). Corporate sustainability and digital transformation: The role of digital capabilities. *Technological Forecasting and Social Change*, 161, 120262.

Giunipero, L., Hooker, R., & Denslow, D. (2018). Purchasing and supply management sustainability: Drivers and barriers. *Journal of Supply Chain Management, 54*(3), 45–67.

Hair, J., & Alamer, A. (2022). Partial Least Squares Structural Equation Modeling (PLS-SEM) in second language and education research: Guidelines using an applied example. *Research methods in applied linguistics*, *1*(3), 100027.

Imoro, A.-R., Seidu, M. T., & Boadi, R. A. (2025). *Enhancing sustainable procurement: The role of e-procurement implementation in local government institutions of Ghana*. *International Journal of Procurement Management, 24*(3), 347–369.

Imoro, Z., Abukari, M., & Salifu, M. (2025). E-procurement implementation and sustainable procurement practices in Ghana's Upper East Region. *African Journal of Public Sector Management, 12*(1), 34–52.

Mkopi, J. G. (2022). E-procurement and sustainable public procurement in Tanzanian local government authorities. *African Public Procurement Law Journal, 4*(1), 33–51.

Mwije, A., & Kĩrungi, D. (2020). Digital public procurement in East Africa: Transparency gains and sustainability gaps. *Government Information Technology Journal, 15*(2), 101–119.

Nchabeleng, M. E., & Ncube, T. R. (2025). E-procurement adoption barriers in South African provincial treasuries: A case of Mpumalanga. *South African Journal of Information Management, 27*(1), a1523.

Negedu, J. I., Durowoju, O., Foster, S., & Douglas, J. A. (2025). Sustainable public procurement as an instrument for sustainable development: An exploratory study of local government areas in low-income countries. *International Journal of Economics and Business Research, 14*(3), 109–116.

Obazele, E. I., & Osuji, S. O. (2025). E-government procurement and sustainable development goals in Edo State, Nigeria. *Nigerian Journal of Public Administration, 18*(1), 67–84.

OECD. (2019). *Digital government in Africa: E-procurement and beyond*. OECD Publishing.

OECD. (2020). *Public procurement for sustainable and inclusive growth*. OECD Publishing.

Orlikowski, W. J., & Scott, S. V. (2008). Sociomateriality: Challenging the separation of technology and work. *Academy of Management Annals*, 2(1), 433–474.

Public Buyers Community. (2025). *Portugal's ECO360 Strategy: A national framework for green public procurement*. European Commission.

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DOI: https://doi.org/10.56879/ijbm.v5i4.188

Public Procurement Regulatory Authority. (2026). *Procurement compliance rises to 79pc amid persistent gaps, PPRA report shows*. *The Citizen*, Dar es Salaam.

Public Procurement Regulatory Authority. (2026). *Procurement through NeST saves over 35bn/- in two years, cuts carbon emissions*. PPRA.

Sanchez-Graells, A. (2021). *Digital procurement and the future of public contracts*. Oxford University Press.

Saunders, C. H., Sierpe, A., Von Plessen, C., Kennedy, A. M., Leviton, L. C., Bernstein, S. L., ... & Leyenaar, J. K. (2023). Practical thematic analysis: a guide for multidisciplinary health services research teams engaging in qualitative analysis. *Bmj*, *381*.

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

Sustainability Magazine. (2026). *How Antibes used AI to automate green budgeting and procurement*. Sustainability Magazine

Testa, F., Annunziata, E., Iraldo, F., & Frey, M. (2016). Drawbacks and opportunities of green public procurement: An analysis of the Italian experience. *Journal of Industrial Ecology, 20*(2), 309–322.

Thai, K. V. (2017). *International handbook of public procurement*. CRC Press.

Thai, K. V. (2017). *International public procurement: Concepts and practices* (3rd ed.). Academic Press.

Tummers, L., & Rocco, P. (2015). Alienation from public policy: Concept and measurement. *Public Administration Review, 75*(4), 574–585.

UN Environment Programme. (2022). *Sustainable public procurement: A global review*. UNEP.

UNEP. (2017). *Sustainable public procurement guidelines*. United Nations Environment Programme.

United Nations Development Programme. (2022). *Africa procurement review: Local government dimensions*. UNDP Regional Service Centre.

Vaidya, K., Sajeev, A. S. M., & Callender, G. (2006). Critical factors that influence e-procurement implementation success in the public sector. *International Journal of Productivity and Performance Management, 55*(3/4), 275–296.

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