

Electronic-Procurement and Performance of Micro, Small and Medium Enterprises in Nairobi City County, Kenya

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Abstract: This study examined the impact of electronic procurement on the performance of Micro, Small and Medium Enterprises (MSMEs) in Nairobi City County, Kenya. It focused on e-tendering, e-sourcing, e-invoicing, and e-payment, as well as technological barriers affecting adoption. Guided by Innovation Theory, Entrepreneurship Theory, and Diffusion of Innovation Theory, the study adopted a descriptive research design targeting 3,000 MSMEs, with a sample of 353 respondents selected through stratified and simple random sampling. Data was collected using structured questionnaires and analyzed using SPSS (Version 26) through descriptive and inferential statistics.

Findings show that all four electronic procurement practices have a positive and statistically significant effect on MSME performance. E-sourcing had the strongest influence ($B = 0.531, p = 0.000$), followed by e-invoicing ($B = 0.279, p = 0.000$), e-tendering ($B = 0.129, p = 0.000$), and e-payment ($B = 0.127, p = 0.000$). Overall, the study concludes that electronic procurement enhances efficiency, transparency, and competitiveness among MSMEs. It recommends targeted government support and policy interventions to improve digital adoption and reduce technological barriers.

Keywords: Electronic procurement; MSME performance; E-tendering; E-sourcing; Nairobi City County.

1. INTRODUCTIONS

Micro, Small and Medium Enterprises (MSMEs) are globally recognized as key drivers of socio-economic development, contributing significantly to employment creation and GDP. According to the World Bank (2021), MSMEs account for more than 90% of businesses globally and generate over 40% of GDP in developing economies, with their contribution increasing when informal enterprises are included. They are also responsible for approximately 70% of job creation, highlighting their central role in addressing unemployment, particularly among youth. Similarly, Bayraktar and Algan (2019) emphasize that MSMEs are major contributors to employment, economic growth, and innovation, accounting for over 55% of GDP in developed economies and employing more than 90% of the workforce. Despite their importance, MSMEs face persistent structural and operational challenges, particularly in procurement systems. Allen (2020) highlights how the COVID-19 pandemic disrupted MSME operations in the UK through reduced demand, supply chain disruptions, increased costs, and delayed deliveries, forcing closures or increased borrowing. Villa (2022), in a multi-country study, identifies major procurement-related constraints including complex registration processes, limited access to e-procurement platforms, cash flow difficulties, high interest rates, and delayed government payments. These challenges restrict MSMEs' participation in public procurement and weaken their financial stability.

In Europe, MSMEs constitute 99.8% of enterprises and contribute more than half of GDP, yet remain constrained by limited finance, weak technical capacity, and competitive disadvantages compared to large firms (Andhov, 2017). Similarly, in Africa, MSMEs account for over 80% of employment but continue to face barriers such as limited access to finance and skills gaps (Runde, Savoy & Staguhn, 2021). Country-specific studies in Zimbabwe (Njanike, 2019) and South Africa (Kalidas, Magwentshu & Rajagopaul, 2020) further confirm challenges including poor managerial capacity, restricted market access, limited finance, and weak cash-flow management, despite MSMEs' significant contribution to employment

and GDP. In Kenya, MSMEs contribute about 30% to GDP and 98% of business activity, yet their performance remains constrained by financial exclusion, infrastructure deficits, corruption, and weak managerial capacity (Mutunga, 2020; Wakiaga, 2019). Many MSMEs also face challenges in accessing public procurement opportunities through systems such as AGPO, with reports indicating closure of approximately 400,000 MSMEs within two years due to these constraints (Kenya National Bureau of Statistics, cited in Wakiaga, 2019). In Nairobi City County, MSMEs despite contributing significantly to employment continue to struggle with high operational costs, limited innovation, regulatory barriers, and procurement inefficiencies (Musamali, Njenga & Ngugi, 2019; Morrisson, 2020).

MSME performance is influenced by factors such as access to finance, firm size, managerial capability, education level, infrastructure, and technology adoption (Noshad et al., 2019; Ndiaye et al., 2018). In Kenya, access to credit, technology use, and workforce skills strongly determine performance outcomes (Ombongi & Long, 2018), while financial management and taxation policies also play a critical role (Benedict et al., 2021). In Nairobi County specifically, access to finance, managerial skills, and education levels significantly influence MSME performance (Nyanumba, 2018).

Electronic procurement (e-procurement) has emerged globally as a key strategy for improving efficiency, transparency, and MSME participation in procurement processes (Boariu, 2015; EDICOM, 2020). It reduces transaction costs, enhances speed, and minimizes corruption risks. International experiences demonstrate its benefits: Indonesia's *Bela Pengadaan* platform supports MSME participation, India uses financial instruments to improve MSME liquidity, and Argentina integrates procurement systems with financial management to improve payment tracking (Villa, 2022). In South Africa, e-procurement components such as e-design and e-negotiation enhance supply chain efficiency, although other components show limited impact (Madzimure, Mafini & Dhurup, 2020). In Kenya, Mutunga (2020) found that e-tendering improves efficiency by reducing costs and time in procurement processes, although its impact on overall MSME performance remains limited. Despite benefits such as improved sourcing, invoicing, and payment systems, challenges persist in adoption, especially in Nairobi City County where technological and institutional barriers hinder effective utilization.

The problem remains that although MSMEs significantly contribute to Kenya's economy, their performance continues to decline, with many failing within two years of operation. Limited integration of digital procurement systems, financial constraints, and institutional inefficiencies continue to hinder their sustainability. Existing studies present contextual and methodological gaps, particularly in understanding how specific e-procurement dimensions (e-tendering, e-sourcing, e-invoicing, and e-payment) influence MSME performance in Nairobi City County, necessitating further empirical investigation (Villa, 2022; Mutunga, 2020; Boariu, 2015; EDICOM, 2020).

2. LITERATURE REVIEW

2.1 Theoretical Framework

This study is anchored on three complementary theories—Technology Diffusion Theory (Rogers, 1962), Schumpeter's Theory of Innovation (Schumpeter, 1991), and Drucker's Entrepreneurship Theory (Drucker, 1985)—which collectively explain how technological innovations such as electronic procurement are adopted and translated into MSME performance outcomes.

Technology Diffusion Theory explains the spread of innovations within a social system over time through categories of adopters ranging from innovators to laggards. Rogers (2003) argues that adoption is influenced by perceived innovation attributes such as relative advantage, compatibility, complexity, trialability, and observability. In MSMEs, this theory is useful in explaining variations in the adoption of electronic procurement systems, where some firms quickly embrace technologies such as e-tendering and e-payment, while others delay due to perceived risks or limited information. However, the theory has been criticized for oversimplifying adoption as a linear and rational process and for underestimating structural constraints such as limited financial capacity, weak ICT infrastructure, and regulatory barriers (Greenhalgh et al., 2004; Lyytinen & Damsgaard, 2001). Despite these limitations, it remains relevant in understanding the diffusion of e-procurement innovations among MSMEs.

Schumpeter's Theory of Innovation emphasizes that economic development is driven by entrepreneurial innovation that disrupts market equilibrium through "creative destruction." According to Schumpeter (1991), entrepreneurs introduce new products, processes, and systems that reshape competition and enhance firm performance. Innovation is therefore central to MSME competitiveness and survival. However, critics argue that the theory overemphasizes the role of individual entrepreneurs while ignoring institutional and structural constraints, and assumes overly optimistic outcomes where

innovation always leads to success (Nelson & Winter, 1982; Dosi, 1988). Nevertheless, the theory remains relevant in explaining how MSMEs leverage innovations such as electronic procurement to improve efficiency and market positioning.

Drucker's Entrepreneurship Theory further complements this perspective by viewing innovation as a systematic process of opportunity recognition and exploitation. Drucker (1985) posits that entrepreneurs succeed by identifying opportunities arising from unexpected events, inefficiencies, market shifts, demographic changes, and changes in consumer perception. These opportunities are then converted into productive innovations that enhance business performance. However, the theory has been criticized for overemphasizing individual entrepreneurial ability while downplaying structural constraints such as access to finance, regulatory environments, and technological limitations (Shane, 2003; Zahra & Wright, 2011). Even so, it remains useful in explaining how MSMEs can strategically identify and exploit opportunities presented by electronic procurement systems.

Taken together, these three theories converge on the idea that MSME performance is strongly influenced by innovation adoption, entrepreneurial capability, and the broader institutional environment. Electronic procurement, therefore, is conceptualized as an innovation whose diffusion, adoption, and exploitation determine its impact on MSME performance.

2.2 Empirical Literature Review

2.2.1 Electronic Procurement and MSME Performance

Electronic procurement (e-procurement) refers to web-based systems that integrate procurement activities from sourcing to payment, replacing traditional manual processes with automated digital platforms (Medius, 2021). It typically includes electronic sourcing, tendering, invoicing, and payment functions that enhance transparency, efficiency, and accountability (Awati & Pratt, 2021). Across studies, e-procurement is consistently associated with reduced transaction costs, improved speed, and increased transparency in procurement processes (Ponniah, 2022). However, its implementation is often constrained by system complexity, inadequate ICT skills, and integration challenges (Katrych, 2022).

Empirical evidence presents a generally positive but context-dependent relationship between e-procurement and organizational performance. Studies such as Kubwimana and Nimpano (2025) and Nyagosia and Nyile (2025) demonstrate that e-procurement improves efficiency, transparency, and compliance in public institutions in Rwanda and Kenya. However, these findings are largely institutional and public-sector oriented, limiting their direct applicability to MSMEs operating in competitive market environments. In Kenya, Mutunga (2020) and Makhamara (2022) found that e-procurement contributes to MSME performance in Nairobi City County through cost reduction and improved access to procurement opportunities, although the effects are moderate due to persistent structural and technological barriers. This suggests that while e-procurement has potential, its impact on MSMEs is shaped by contextual constraints such as resource limitations and uneven digital readiness.

2.2.2 Electronic Tendering and MSME Performance

Electronic tendering involves the digital submission, evaluation, and awarding of procurement contracts through online platforms (Aquino, 2022). It is widely recognized for improving transparency, reducing procurement costs, and enhancing efficiency in procurement systems. Empirical studies generally confirm its positive contribution to MSME performance. For instance, Elsanosi (2020) found that electronic tendering improved operational efficiency and reduced costs among MSMEs in Ireland, while Eugenie and Dieu (2022) reported improved competitiveness and access to procurement opportunities in Rwanda.

However, contrasting evidence exists. Studies such as Masuku and Hlongwane (2022) and Madzimore et al. (2020) found no statistically significant effect of electronic tendering on SME performance in South Africa, attributing this to limited ICT capacity and inadequate training. In Kenya, Mutunga (2020) and Makhamara (2022) similarly reported only marginal improvements, suggesting that adoption alone does not guarantee performance gains. Across the literature, the effectiveness of electronic tendering appears to depend on enabling conditions such as digital skills, institutional support, and technological infrastructure.

2.2.3 Electronic Sourcing and MSME Performance

Electronic sourcing refers to the use of digital platforms to identify, evaluate, and select suppliers (Annalakshmi, 2021). It improves transparency, reduces search costs, and enhances efficiency in supplier management. Empirical studies consistently show its positive influence on organizational performance. For example, Elsanosi (2020) found improved

operational efficiency among MSMEs in Ireland, while Masuku and Hlongwane (2022) reported similar benefits in South Africa. Harelimana (2018) also established that electronic sourcing enhances communication and reduces procurement transaction costs.

In Kenya, Mutunga (2020) found that electronic sourcing significantly improves MSME performance by increasing access to procurement opportunities and reducing inefficiencies in supplier search. Similar findings in Ghana (Tanzubil, 2025) and Kenya's retail sector (Nunda and Machoka, 2025) reinforce its positive role in improving procurement outcomes. Nevertheless, differences in ICT infrastructure, institutional readiness, and market structure suggest that MSMEs face unique constraints that may limit full realization of these benefits, particularly in urban competitive environments.

2.2.4 Electronic Invoicing and MSME Performance

Electronic invoicing involves the digital generation, transmission, and processing of invoices, reducing reliance on paper-based systems (Nambiar, 2022). It enhances financial transparency, reduces administrative costs, and improves payment tracking. Across studies, electronic invoicing is consistently associated with improved operational efficiency.

Research by Elsanosi (2020) and Masuku and Hlongwane (2022) shows that electronic invoicing reduces costs and improves efficiency among MSMEs in Ireland and South Africa respectively. Similarly, Harelimana (2018) found improved communication and reduced transaction costs in Rwanda, while Mutunga (2020) confirmed that it enhances MSME performance in Kenya by reducing duplication and paperwork. However, Asmawi et al. (2025) highlight persistent barriers such as limited digital skills, high implementation costs, and weak institutional support. This indicates that while the benefits are well established, adoption challenges continue to limit impact, especially among MSMEs in developing economies.

2.2.5 Electronic Payment and MSME Performance

Electronic payment systems facilitate digital financial transactions without the use of cash or paper instruments, thereby improving efficiency, transparency, and speed of payment processing (USAID, 2014). Empirical studies consistently show a positive relationship between electronic payments and MSME performance. Kilay et al. (2022) found significant improvements in MSME growth and performance in Indonesia, while Nahar (2022) reported similar benefits in Bangladesh in terms of convenience and operational efficiency. Kwabena et al. (2019) further established that digital payments enhance competitiveness and business growth in Ghana.

In Africa, Masuku and Hlongwane (2022) and Harelimana (2018) found that electronic payments reduce transaction costs and improve operational efficiency. In Kenya, Yatch and Otinga (2021) and Kiusya (2018) confirmed that electronic payment systems positively influence procurement and firm performance. However, despite these benefits, MSMEs continue to face challenges related to digital literacy, infrastructure gaps, and financial constraints, which limit full adoption and optimal performance outcomes, particularly in urban environments such as Nairobi City County.

3. RESEARCH METHODOLOGY

The study adopted a descriptive research design, as recommended by Kothari (2014), since it enabled the researcher to examine electronic procurement and MSME performance in their natural setting without manipulating variables. The design further supported the use of questionnaires and allowed the generation of descriptive statistics such as frequencies, percentages, and relationship patterns among variables. The target population comprised approximately 3,000 formally registered and licensed MSMEs operating within Nairobi City County, managed by individuals familiar with business operations and electronic procurement systems. From this population, a sample of 353 MSMEs was determined using the Taro Yamane formula at a 5% margin of error. Stratified random sampling ensured representation across key sectors such as transport, manufacturing, agriculture, textiles, retail, hospitality, health, and professional services, while simple random sampling was used within strata. In addition, purposive sampling identified respondents with adequate knowledge of electronic procurement to enhance data quality.

Primary data were collected using structured questionnaires with closed-ended items, including Likert scales and numerical categories, administered by the researcher with the help of trained research assistants using a pick-and-drop method. Secondary data were drawn from journals, reports, and other relevant literature to complement the primary data. Data collection commenced after obtaining approvals from the university, ethics committee, NACOSTI, and Nairobi City County authorities. A pilot study involving 35 MSMEs (10% of the sample) was conducted to test the research instruments, yielding a Cronbach's alpha of 0.84, which indicated strong reliability above the 0.70 threshold. Validity was ensured through expert review by the supervisor and refinement of instruments based on pilot feedback.

After data collection, questionnaires were screened, coded, and analyzed using SPSS Version 26. Both descriptive and inferential statistics were employed, with results presented in tables and graphs. Correlation analysis was used to examine the relationships between electronic procurement dimensions—electronic tendering, sourcing, invoicing, and payment—and MSME performance. Ethical standards were strictly observed, including obtaining relevant approvals, ensuring voluntary participation, and guaranteeing

4. RESEARCH FINDINGS AND DISCUSSIONS

4.1 Descriptive Statistics on Electronic Procurement Practices

The study examined electronic procurement practices among MSMEs in Nairobi City County focusing on e-tendering, e-sourcing, e-invoicing, and e-payment using mean and standard deviation.

4.1.1 E-Tendering Practices

Table 4.1: E-Tendering Practices

Statement	Mean	SD
The e-tendering platform is easily accessible to MSMEs regardless of location.	4.28	0.82
The system is user-friendly and easy to use.	4.22	0.85
Tender information is timely and fully disclosed.	4.33	0.80
The platform allows tracking of procurement stages.	4.45	0.78
Procurement officers are accountable for decisions.	4.50	0.55
Digital records enhance accountability through audit trails.	4.52	0.52
The system promotes fair competition.	4.47	0.79
E-tendering increases MSME participation in procurement.	4.35	0.83

Respondents highly rated all e-tendering dimensions (M = 4.22–4.52), indicating strong agreement that the system enhances accessibility, transparency, accountability, and fairness. The highest-rated aspect was audit trail and digital records (M=4.52), confirming strong confidence in system integrity. Moderate variation suggests differences in digital literacy and access.

4.1.2 Hypothesis Testing (E-Tendering)

Table 4.2: Correlation between Electronic Tendering and Business Performance

Variable	Pearson Correlation	Sig. (2-tailed)	N
E-Tendering vs Performance	0.461**	0.000	350

There is a moderate, positive, and significant relationship between e-tendering and MSME performance. Increased adoption improves business outcomes. The finding supports Innovation Theory (Schumpeter) and Diffusion of Innovation Theory (Rogers).

4.2 Electronic Sourcing

Table 4.3: Electronic Sourcing

Statement	Mean	SD
Reduces time to identify procurement opportunities.	4.41	0.60
Streamlines procurement and reduces delays.	4.44	0.59
Reduces administrative and operational costs.	4.05	0.76
Reduces transaction costs.	4.03	0.78
Enhances value for money and competitive pricing.	4.58	0.59
Improves efficient resource utilization.	4.49	0.58

E-sourcing is highly rated ($M = 4.03\text{--}4.58$), with strongest agreement on value for money ($M=4.58$) and efficiency improvements. It enhances supplier access, speed, and procurement efficiency, though cost reduction effects are moderate.

4.2.1 Hypothesis Testing (E-Sourcing)

Table 4.4: Correlation between Electronic Sourcing and Business Performance

Variable	Pearson Correlation	Sig. (2-tailed)	N
E-Sourcing vs Performance	0.24**	0.000	350

There is a weak but statistically significant positive relationship between e-sourcing and performance. It contributes to efficiency and transparency but with lower effect strength compared to other practices.

4.3 Electronic Invoicing

Table 4.5: E-Invoicing

Statement	Mean	SD
Improves invoice accuracy.	3.68	1.10
Reduces manual errors.	3.63	1.15
Ensures data security.	3.70	1.12
Protects data through encryption.	3.65	1.14
Ensures timely invoice processing.	3.72	1.09
Improves approval and verification speed.	3.66	1.13

E-invoicing shows moderate ratings ($M \approx 3.63\text{--}3.72$) with relatively high variability. It improves accuracy, security, and timeliness, but adoption is affected by system integration challenges and ICT capacity gaps.

4.3.1 Electronic Payment

Table 4.6: E-Payment

Statement	Mean	SD
Reduces transaction costs.	4.70	0.57
Reduces banking and processing charges.	4.72	0.55
Enhances transparency of transactions.	4.75	0.54
Enables monitoring of payments.	4.73	0.56
Reduces payment delays.	4.76	0.53
Ensures timely settlement of invoices.	4.74	0.55

E-payment is the highest-rated practice ($M = 4.70\text{--}4.76$), showing strong agreement that it improves transparency, speed, and cost efficiency. It is the most effective electronic procurement component.

4.3.2 Hypothesis Testing (E-Payment)

Table 4.7: Correlation between E-Payment and Business Performance

Variable	Pearson Correlation	Sig. (2-tailed)	N
E-Payment vs Performance	0.33**	0.000	350

There is a weak-to-moderate but significant positive relationship between e-payment and MSME performance.

4.4 Enterprise Performance

Table 4.8: Enterprise Performance

Statement	Mean	SD
Customer satisfaction	3.45	0.76
Repeat business	3.41	0.78
Profit growth	3.35	0.57
Revenue exceeds costs	3.33	0.60
Market share growth	3.69	0.56
Market presence	3.02	0.55
Supplier relationships	3.48	0.59
Supplier trust	3.46	0.61
Cost control efficiency	3.27	0.63
Resource utilization	3.60	0.62

Enterprise performance is moderate overall ($M \approx 3.02-3.69$). MSMEs perform better in market share and supplier relations, but weaker in market presence and profitability.

4.5 Multiple Regression Analysis

Table 4.9: Regression Coefficients

Variable	B	Std. Error	Beta	t	Sig.
Constant	0.069	0.016	—	4.317	0.000
E-Tendering	0.123	0.022	0.129	5.471	0.000
E-Sourcing	0.456	0.014	0.531	33.002	0.000
E-Invoicing	0.342	0.006	0.279	53.058	0.000
E-Payment	0.081	0.013	0.127	6.201	0.000

Electronic procurement practices significantly enhance MSME performance in Nairobi City County, with e-sourcing and e-invoicing as the most influential drivers, followed by e-tendering and e-payment.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The study concludes that electronic procurement practices—e-tendering, e-sourcing, e-invoicing, and e-payment—play a clear and positive role in improving the performance of MSMEs in Nairobi City County. Overall, the results show that when MSMEs adopt digital procurement systems more fully, their business performance tends to improve in meaningful ways. However, the strength of this effect is not the same across all components.

Among the four practices, e-sourcing stands out as the most important driver of performance. It has the strongest influence, suggesting that the ability to identify, evaluate, and contract suppliers digitally gives MSMEs a real competitive advantage. E-invoicing also makes a noticeable difference by helping businesses manage their finances better, reduce errors, and improve cash flow. This makes day-to-day operations smoother and more reliable.

E-tendering, while still important, has a smaller but positive impact. It mainly supports fairness, transparency, and wider participation in procurement processes, helping MSMEs access opportunities they might otherwise miss. E-payment also contributes positively, especially by making transactions faster, more transparent, and easier to track, although its direct effect on overall performance is relatively modest compared to the other tools.

5.2 Recommendations

Based on these findings, the study recommends that MSMEs should gradually but deliberately adopt electronic procurement systems as part of their normal business operations. This shift does not need to happen overnight, but firms should aim to build capacity over time so that staff become more comfortable and confident using digital tools.

The study also emphasizes the need for stronger support from government institutions and development partners. Many MSMEs still struggle with understanding or trusting digital procurement systems, often due to limited exposure or training. Practical support—such as training workshops, mentorship programs, and hands-on demonstrations—can go a long way in making these systems more accessible and easier to use.

Finally, the study acknowledges that several challenges still slow down adoption, including limited digital skills, cost of technology, cybersecurity concerns, resistance to change, and regulatory difficulties. To address these, policymakers are encouraged to strengthen support systems through affordable digital infrastructure, financial incentives, improved cybersecurity awareness, and simpler regulatory frameworks. Creating a more supportive environment will help MSMEs fully benefit from digital procurement and improve their long-term competitiveness and sustainability.

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