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Influence of Digital Supplier Relationship Management Practices on Procurement Performance Among Large Manufacturing Firms in Nairobi County, Kenya

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Abstract

Purpose: This study examined the influence of DSRM practices on procurement performance among large manufacturing firms in Nairobi County.

Methodology: This research used adopted a descriptive cross-sectional design. The target population was 155 large manufacturing firms affiliated to the Kenya Association of Manufacturers in Nairobi County, giving an accessible population of 310 procurement, supply chain and logistics officers. Yamane's (1967) formula yielded a sample of 173 respondents; stratified proportional allocation and simple random selection produced 138 usable responses.

Findings: Data were analyzed using SPSS Version 27 with descriptive statistics, Pearson correlation and multiple linear regression. Respondents reported moderate levels of DSRM adoption (mean scores between 3.39 and 3.42 on a five-point scale). The four DSRM practices jointly explained 74.6 per cent of the variance in procurement performance ($R^2 = 0.746$, adjusted $R^2 = 0.734$; $F(6, 131) = 64.08$, $p < 0.001$). Supplier information sharing had the strongest effect ($\beta = 0.275$, $p < 0.001$), followed by automation of supplier management ($\beta = 0.236$, $p = 0.005$), digital supplier integration ($\beta = 0.223$, $p = 0.003$) and electronic communication systems ($\beta = 0.174$, $p = 0.029$).

Unique Contribution to Theory Practice and Policy: The study recommended that Firms should prioritize supplier information sharing, because it produced the largest effect and requires the least capital expenditure. The Kenya Association of Manufacturers should also establish a benchmarking service in which member firms submit anonymized procurement metrics and receive comparative reports.

Keywords: *Digital Supplier Relationship Management, Procurement Performance, Supplier Collaboration, Large Manufacturing Firms*

INTRODUCTION

Procurement has moved from a clerical support activity to a strategic function, since purchased materials and services typically account for sixty to eighty per cent of expenditure in manufacturing firms (Monczka et al., 2020). How firms select, contract and coordinate suppliers therefore shapes both their cost position and their capacity to sustain production. Supply chain responsiveness depends largely on the efficiency of material flow (Christopher, 2016), and supplier relationship management (SRM) is the governance mechanism that coordinates that flow (Lambert & Schwieterman, 2012). Firms that treat suppliers as long-term partners record shorter cycle times, fewer quality failures and lower total cost of ownership (Gunasekaran et al., 2017; Mishra et al., 2018). Digitalization has expanded what SRM can deliver. Enterprise resource planning systems, supplier portals, electronic data interchange and cloud platforms now give manufacturers and suppliers a shared view of orders, stock and quality records. This bundle of technologies and associated routines is termed digital supplier relationship management (DSRM) in this study. It improves visibility and decision quality (Sanders, 2016) and strengthens resilience by shortening the time between a signal and a response (Wieland et al., 2020).

Despite these benefits, the evidence is uneven. Studies from North America and Western Europe generally report positive links between digital procurement and performance, but they assume mature broadband, payment systems, logistics infrastructure and supplier digital capability (Gunasekaran et al., 2017; Mishra et al., 2018). Evidence from developing economies is thinner and often contradictory, with several studies finding that systems are installed but not used, or used only for record-keeping rather than coordination (Mugo et al., 2019; Ngugi & Mugo, 2020). This distinction between installation and use implies that the returns to DSRM depend on how deeply technology is embedded in the supplier relationship, not on whether a licence has been purchased. In Kenya, much of the digital procurement research has focused on the public sector, where compliance under the Public Procurement and Asset Disposal Act, 2015 is the main outcome of interest (Mugo et al., 2019; Public Procurement Regulatory Authority, 2025). Private manufacturers face different conditions: no statutory common platform, heterogeneous supplier digital capacity, and performance judged by production continuity and margin. Public-sector findings therefore cannot be assumed to transfer.

Kenya's manufacturing sector offers a demanding setting for testing these propositions. Its contribution to GDP slipped from 7.3 per cent in 2024 to 7.1 per cent in 2025, and output grew by only 2.0 per cent to KSh 3.8 trillion, the weakest expansion in five years, even as the sector employed 388,564 people, or 11.7 per cent of formal wage employment (Kenya National Bureau of Statistics, 2026). The Kenya Association of Manufacturers links the slowdown to high energy and regulatory costs, unpredictable taxation and cheap imports, and warns that the 20 per cent GDP target is unreachable without greater competitiveness (Mwita, 2026). Nairobi County hosts the country's largest cluster of large manufacturers, most of which have adopted at least one digital

procurement module, yet they still report late deliveries, quality rejections and unreconciled price variation. Illicit trade, estimated at 8.9 to 9.3 per cent of GDP, further signals weak traceability in formal supply chains (Mwita, 2026). This coexistence of adoption and underperformance calls for a more careful specification of the problem. The study therefore examines four DSRM practices, namely digital supplier integration, electronic communication systems, supplier information sharing and automation of supplier management, against procurement performance measured by cost, quality, delivery and cycle time. Data were drawn from procurement managers, supply chain managers and logistics officers in large manufacturing firms affiliated to the Kenya Association of Manufacturers in Nairobi County, with the aim of establishing which practices move performance, how much variation they explain, and what firms and policy actors should do differently.

Statement of Problem

Digital procurement infrastructure is expected to deliver the coordination benefits documented in the international literature, namely better visibility, lower costs and more dependable supply, particularly among the firms best able to afford it. Large manufacturing firms in Nairobi County have invested substantially in such systems over the past decade, yet the expected gains remain elusive. Manufacturing output grew by only 2.0 per cent in 2025 and the sector's share of GDP fell to 7.1 per cent, with high input costs identified as a principal constraint (Kenya National Bureau of Statistics, 2026). Procurement is the function through which those costs are incurred, and practitioner accounts describe persistent late deliveries, inconsistent input quality and prices that cannot be reconciled to negotiated contracts. The consequences fall first on managers in Nairobi's manufacturing sector, who are making expensive technology decisions without locally generated evidence on which practices pay. A firm weighing a supplier portal upgrade cannot tell from the available literature whether to prioritize interoperability, forecast sharing, workflow automation or communication tools. Policy actors face a parallel problem, since the Kenya National Digital Masterplan and the National Treasury's digitalization agenda assume that digitizing procurement generates efficiency on the strength of an evidence base drawn largely from the public sector.

Prior studies leave three gaps that explain why this problem persists. First, research on digital procurement in Kenya has concentrated on public entities implementing statutory platforms, where the outcome of interest is compliance with the Public Procurement and Asset Disposal Act, 2015 rather than competitive performance (Mugo et al., 2019; Public Procurement Regulatory Authority, 2025). Second, where private firms have been studied, digitalization is often operationalized as a single composite construct, which conceals differences between practices and leaves managers unable to sequence their investments (Ngugi & Mugo, 2020). Third, the international evidence derives largely from economies with digitally mature suppliers, and Wieland et al. (2020) cautioned that the effects of digital transformation are contingent on context

and require local validation. This study addresses these gaps by measuring four digital supplier relationship management practices separately and estimating their simultaneous effects on a multi-dimensional measure of procurement performance (cost, quality, delivery and cycle time) among large manufacturing firms in Nairobi County. The evidence generated is intended to help managers prioritize, and policy actors target, interventions on the practices that demonstrably improve performance.

LITERATURE REVIEW

Theoretical Framework

Three complementary theories anchored the study. The Resource-Based View (RBV), Transaction Cost Theory (TCT) and the Technology Acceptance Model (TAM). The RBV, formalized by Barney (1991), holds that sustained competitive advantage arises from resources that are valuable, rare, imperfectly imitable and non-substitutable, and not from inputs that competitors can simply buy. Applied here, it distinguishes between technology and capability. An ERP module or supplier portal is available to any firm with the budget and is therefore neither rare nor inimitable, whereas the accumulated stock of shared data, calibrated supplier trust, revised workflows and staff competencies built through years of intensive use are costly to replicate. The RBV therefore predicts that practices which deepen interdependence with suppliers, namely digital integration and information sharing, should yield stronger and more defensible effects than practices that merely automate administrative tasks, because they build relation-specific assets.

TCT wasdeveloped by Williamson (1985) and it explains the governance of exchange by reference to the costs of searching for partners, negotiating contracts, monitoring performance and enforcing agreements, which rise with uncertainty, asset specificity and frequency of exchange. Procurement is transaction-cost intensive by nature, and DSRM addresses each cost category. Integration removes search and re-entry costs, electronic communication reduces negotiation and follow-up costs, information sharing reduces the uncertainty that forces firms to hold buffer stock and price in risk, and automation lowers monitoring and approval costs. TCT therefore predicts that DSRM improves performance mainly through cost and cycle-time channels. Williamson (1985) also cautioned that adopting an economizing governance mechanism is itself costly, requiring complementary investment in systems, training and contractual adjustment, which explains why digital systems coexist with persistent inefficiency in developing economies and motivated the inclusion of length of DSRM use as a control variable. TAM, developed by Davis (1989), then addresses the question the first two theories leave open. It holds that adoption is a behavioural rather than a technical outcome driven by perceived usefulness and perceived ease of use, so two firms with identical licences, suppliers and cost pressures can record different outcomes depending on whether officers actually use the system. TAM also implies that automation matters more than a purely technological account suggests, since automated workflows reduce the effort of

compliance and make non-compliance visible, making automation a behavioural lever that sustains use.

Together, the theories specified the study's causal logic. The RBV explained why DSRM capability, as distinct from DSRM technology, can generate performance differences that persist; TCT identified the cost, cycle-time and uncertainty mechanisms through which that capability operates; and TAM explained why otherwise similar firms extract different value from the same capability by conditioning the effect on actual use. Together, they predicted that all four practices could be positively associated with procurement performance, but that integration and information sharing, which build relation-specific assets and reduce uncertainty, could show the largest effects. In the regression model, this means the integration and information-sharing coefficients could exceed the automation coefficient while all four remain positive.

Conceptual Framework

Figure 1 presents the conceptual framework. Four independent variables, namely digital supplier integration, electronic communication systems, supplier information sharing and automation of supplier management, were hypothesized to influence the dependent variable, procurement performance.

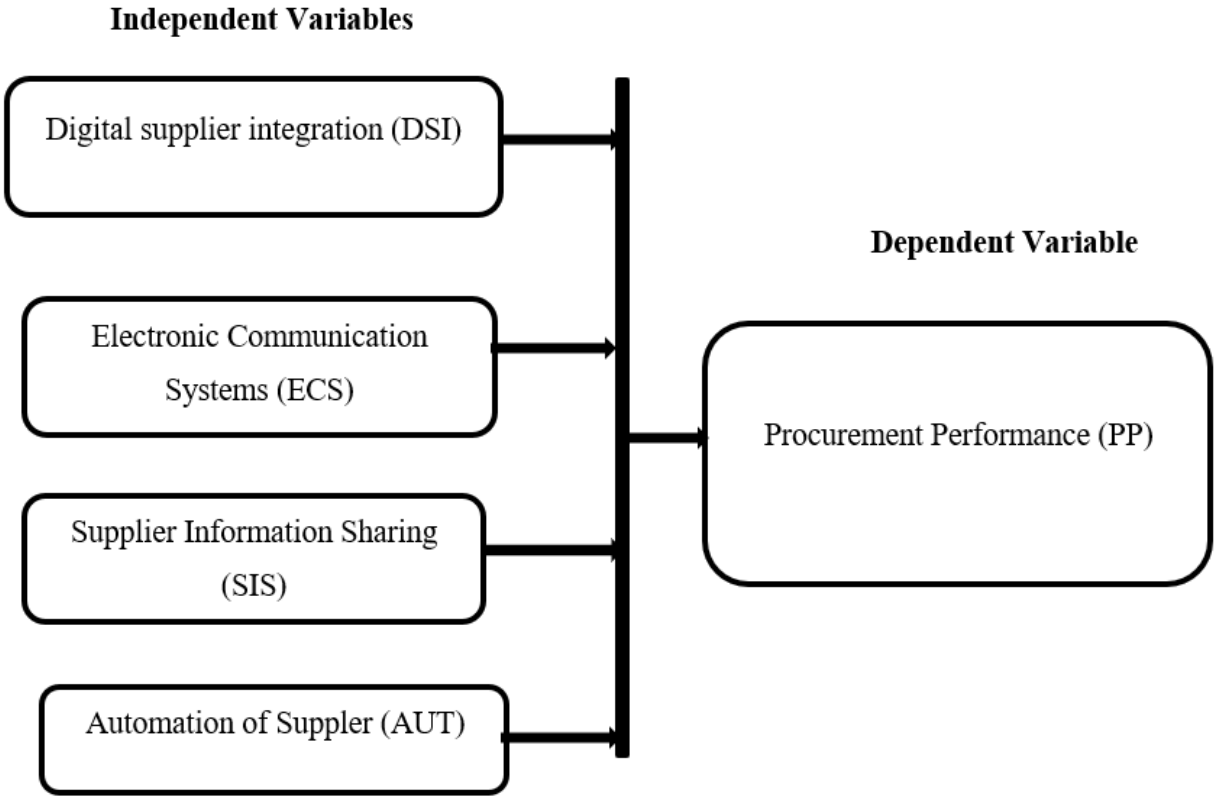


Figure 1: Conceptual Framework

Empirical Review

Gunasekaran et al. (2017), in a systematic review of information technology in logistics, found that digital integration improves responsiveness, cost and coordination, although adoption is uneven across contexts. Mishra et al. (2018), in a meta-analysis of supply chain integration studies, reported that supplier integration shows the strongest operational performance effects and that information sharing is a key mechanism, which supports treating the two practices separately. Wieland et al. (2020), reviewing digital supply chain transformation, concluded that effects on resilience are context-specific and require local validation. These studies were conducted largely in economies whose supplier bases are digitally mature, so they establish the performance case for digital practices but not the case for Kenyan manufacturing.

Mugo et al. (2019), surveying Kenyan manufacturing firms, found that e-procurement adoption was growing but integration with suppliers' own systems was limited, with infrastructure and skills constraining use. Ngugi and Mugo (2020), surveying industrial firms, reported that supplier portals were used mainly for publishing tender notices and receiving quotations rather than for ongoing transactional exchange, which suggests modest integration effects. Otieno (2023), studying large

manufacturing firms in Nairobi, found that e-sourcing practices were positively associated with supply chain performance, confirming the relevance of the large-firm population, though the study addressed e-sourcing alone. Much of the remaining Kenyan work concerns public entities, where the Public Procurement Regulatory Authority (2025) requires all registered suppliers to transact through the e-GP portal, so that compliance rather than competitive performance is the dominant outcome.

These studies leave five gaps, which the present study addresses. First, a contextual gap, whether the international effects hold for private manufacturing firms in Kenya, where supplier digital maturity is uneven, remains untested. Second, a sector gap, Kenyan research concentrates on public entities using statutory platforms, and it is unclear whether those findings transfer to privately governed procurement in competitive manufacturing. Third, a conceptual gap, digitalization is often measured as a composite index that assumes equal effects across components, so it is unknown which of the four supplier-facing practices (integration, electronic communication, information sharing and automation) contributes most. Fourth, an outcome gap, performance is frequently measured by adoption or compliance rather than by cost, quality, delivery and cycle time. Fifth, a methodological gap, descriptive adoption studies predominate, and none has estimated the four practices simultaneously with validity and reliability testing in this population. This study therefore disaggregated digital supplier relationship management into four practices and estimates their relative influence on a multi-dimensional measure of procurement performance, using a validated instrument and a multivariate model on a probability sample of large manufacturing firms in Nairobi County.

METHODOLOGY

The study adopted a descriptive cross-sectional research design with a quantitative approach. The target population comprised all large manufacturing firms operating in Nairobi County and affiliated to the Kenya Association of Manufacturers, together with the procurement personnel employed in those firms. The unit of analysis was the firm, while the unit of observation was the individual procurement officer. Each firm was assumed to employ three officers with direct responsibility for supplier-facing activity, namely a procurement manager, a supply chain manager and a logistics officer. Applying this multiplier to the 155 firms on the association's Nairobi register yielded an accessible population of 465 officers. However, after confirming establishment sizes during the pre-test, fifteen firms were found to operate a single combined procurement and logistics function with fewer than three eligible officers. The accessible population was therefore revised to 310 officers, corresponding to an average of two eligible officers per firm. The sample size was determined using Yamane's (1967) simplified formula. The computation yielded a sample of 175 officers. Two additional respondents were added to compensate for anticipated non-response in a business survey context, giving a planned sample of 177. A two-stage procedure combining stratified random sampling and simple random sampling was used. Stratification

ensured that every manufacturing cluster was represented in proportion to its share of the population. Random selection within strata protected against the selection bias that would arise if firms were chosen on the basis of accessibility. Primary data were collected using a structured, self-administered questionnaire. The questionnaire was administered through two channels. Printed copies were delivered by hand and collected after one week, which suited firms with restricted internet access and allowed the researcher to clarify items in person. Completed questionnaires were coded and entered into the Statistical Package for Social Sciences, Version 27. Descriptive statistics, comprising frequencies, percentages, means and standard deviations, were used to profile respondents and to summarize the extent of adoption of each practice. Inferential analysis proceeded in two stages. Pearson product-moment correlation was first used to examine the direction and strength of the bivariate association between each practice and procurement performance. Multiple linear regression was then used to estimate the unique contribution of each practice while holding the others constant, which is the appropriate technique where predictors are correlated with one another. The estimated model was:

$$PP = \beta_0 + \beta_1 DSI + \beta_2 ECS + \beta_3 SIS + \beta_4 AUT + \beta_5 FS + \beta_6 TU + \varepsilon$$

where PP is procurement performance, DSI is digital supplier integration, ECS is electronic communication systems, SIS is supplier information sharing, AUT is automation of supplier management, FS is firm size, TU is length of DSRM use, β_0 is the constant, β_1 to β_6 are the estimated coefficients and ε is the error term. Hypotheses were tested at the 0.05 level of significance, such that a null hypothesis was rejected where the associated p-value was below 0.05.

The study was conducted in accordance with the ethical requirements of the university and of the National Commission for Science, Technology and Innovation, from which a research permit was obtained before fieldwork began. Approval was also sought from the university's institutional research ethics committee. Participation was voluntary and informed. Finally, the study was designed to avoid harm. Confidentiality was protected throughout. No question required respondents to disclose commercially sensitive pricing, supplier identities or information that could expose their employer to competitive disadvantage, and the performance items asked for assessments rather than figures.

RESULTS

Response Rate

Of the 177 questionnaires distributed, 151 were returned. Thirteen were excluded because they were substantially incomplete, leaving 138 usable questionnaires and a response rate of 79.8 per cent. This rate exceeds the sixty per cent threshold commonly regarded as adequate for survey research in management.

Descriptive Statistics

Digital Supplier Integration

Digital supplier integration recorded an overall mean of 3.42 (SD = 0.76), with 46.4 per cent of respondents agreeing with the constituent statements, 38.0 per cent neutral and 15.6 per cent disagreeing (Table 1). Item means ranged narrowly from 3.36, for suppliers' ability to view stock levels and order status through a shared portal, to 3.49, for real-time exchange of order and delivery data with key suppliers, indicating that integration is developing evenly across its dimensions. Because the means approach but do not reach 4.00, integration appears to be in a transitional state: most firms have established electronic exchange with key suppliers, but full portal visibility, which depends on suppliers having compatible systems, remains incomplete, consistent with the installation-versus-use gap identified in earlier Kenyan research.

Table 1: Descriptive Statistics for Digital Supplier Integration Items

Item	Statement	Mean	SD	Agree (%)	Neutral (%)	Disagree (%)
DSI1	Our procurement system exchanges order and delivery data with key suppliers in real time.	3.49	1.0	50.0	33.3	16.7
DSI2	Suppliers can view our stock levels and order status directly through a shared portal.	3.36	0.99	42.0	40.6	17.4
DSI3	Our ERP is interoperable with the systems used by our major suppliers.	3.43	0.94	47.1	40.6	12.3
DSI4	Documents such as invoices and GRNs are generated once and shared electronically across systems.	3.38	0.99	46.4	37.7	15.9

Electronic Communication Systems

Electronic communication systems recorded an overall mean of 3.42 (SD = 0.75), with 47.6 per cent of respondents agreeing with the constituent statements, 34.6 per cent neutral and 17.8 per cent disagreeing (Table 2). Reaching key suppliers within minutes when a delivery problem arises scored highest (mean = 3.45, SD = 1.00), while accurate transmission of electronic requisitions

and approvals without re-keying scored lowest (mean = 3.38, SD = 1.03). Respondents were thus more confident about the speed of communication than its integrity: speed is achievable with e-mail and messaging applications that need little infrastructure, whereas integrity requires compatible systems on both sides, which marks the practical boundary of communication-based improvement.

Table 2: Descriptive Statistics for Electronic Communication System Items

Item	Statement	Mean	SD	Agree (%)	Neutral (%)	Disagree (%)
ECS1	We reach key suppliers within minutes when a delivery problem arises.	3.45	1.0	49.3	34.1	16.7
ECS2	Electronic requisitions and approvals reach suppliers accurately without re-keying.	3.38	1.03	47.1	31.9	21.0
ECS3	Suppliers acknowledge and respond to our requests through the platform rather than by telephone.	3.43	0.94	44.2	41.3	14.5
ECS4	Disputes with suppliers are resolved faster because communication is recorded electronically.	3.41	0.96	50.0	31.2	18.8

Supplier Information Sharing

Supplier information sharing recorded an overall mean of 3.39 (SD = 0.75), with 46.8 per cent of respondents agreeing with the constituent statements, 35.1 per cent neutral and 18.1 per cent disagreeing (Table 3). Formal invitation of suppliers to comment on shared demand plans scored highest (mean = 3.49, SD = 0.98), while supplier access to contract and pricing information on a common platform scored lowest (mean = 3.32, SD = 1.02). This suggests that sharing is practised as a periodic, consultative exercise rather than continuous transparency: firms disclose forecasts and invite comment but withhold contractual and pricing data, the form of sharing most likely to reduce transaction costs (Williamson, 1985), a caution that is understandable given the risk that disclosing prices could strengthen a supplier's negotiating position with competitors served by the same firm.

Table 3: Descriptive Statistics for Supplier Information Sharing Items

Item	Statement	Mean	SD	Agree (%)	Neutral (%)	Disagree (%)
SIS1	We share rolling demand forecasts with suppliers on a regular schedule.	3.39	1.04	49.3	30.4	20.3
SIS2	Suppliers have access to the quality and performance records we hold on them.	3.36	0.93	43.5	39.9	16.7
SIS3	Contract and pricing information is available to both parties on a common platform.	3.32	1.02	44.2	34.8	21.0
SIS4	Suppliers are formally invited to comment on the demand plans we share with them.	3.49	0.98	50.0	35.5	14.5

Automation of Supplier Management

Automation of supplier management recorded an overall mean of 3.41 (SD = 0.77), with 46.2 per cent of respondents agreeing with the constituent statements, 35.9 per cent neutral and 17.9 per cent disagreeing (Table 4). Automatic approval of requisitions below a set threshold scored highest (mean = 3.44, SD = 1.00), while automatic triggering of re-order levels and delivery schedules from stock data scored lowest (mean = 3.40, SD = 1.04). The near-identical item means, combined with standard deviations of approximately 1.00, indicate that automation is unevenly distributed across firms rather than uniformly partial: some operate rule-based approval and automatic replenishment while others remain manual, a heterogeneity that makes automation a plausible source of performance differences.

Table 4: Descriptive Statistics for Automation of Supplier Management Items

Item	Statement	Mean	SD	Agree (%)	Neutral (%)	Disagree (%)
AUT1	Requisitions below a set threshold are approved automatically by the system.	3.44	1.0	47.8	34.1	18.1
AUT2	Supplier scorecards are generated by the system without manual compilation.	3.4	0.94	44.2	42.0	13.8
AUT3	Re-order levels and delivery schedules are triggered automatically by stock data.	3.4	1.04	44.9	34.1	21.0
AUT4	Staff time previously spent on manual paperwork has been released by automation.	3.42	1.01	47.8	33.3	18.8

Procurement Performance

Procurement performance recorded an overall mean of 3.39 (SD = 0.73), with 46.2 per cent of respondents agreeing with the constituent statements, 36.4 per cent neutral and 17.4 per cent disagreeing (Table 5). Delivery within the agreed lead time scored highest (mean = 3.46, SD = 0.86), while comparison of the procurement cycle with sector benchmarks scored lowest (mean = 3.31, SD = 1.01). This pattern suggests that firms protect delivery dates through expediting, buffer stock and managerial effort rather than by compressing the requisition-to-receipt cycle, and the wider spread on the benchmark item indicates that firms assess their own cycle performance very differently, with the weakest performers well aware of their position.

Table 5: Descriptive Statistics for Procurement Performance Items

Item	Statement	Mean	SD	Agree (%)	Neutral (%)	Disagree (%)
PP1	Our procurement function consistently delivers input costs within budget.	3.39	1.04	47.8	32.6	19.6
PP2	The quality of inputs received meets our production specifications on first delivery.	3.39	0.97	45.7	39.1	15.2
PP3	Deliveries arrive within the agreed lead time.	3.46	0.86	48.6	39.1	12.3
PP4	Overall, our procurement cycle compares well with sector benchmarks.	3.31	1.01	42.0	34.8	23.2
PP5	Rejected or returned consignments have fallen over the last three years.	3.38	1.0	47.1	36.2	16.7

Correlation Analysis

Pearson product-moment correlation was used to examine the bivariate association between the variables. Table 6 reports the coefficients. All four practices correlated positively and significantly with procurement performance at the 0.01 level, with coefficients ranging from 0.765 for electronic communication systems to 0.796 for automation of supplier management. The strength of these associations indicates that firms scoring highly on any one practice also reported better procurement outcomes. The correlations among the independent variables were also substantial, ranging from 0.719 between digital supplier integration and supplier information sharing to 0.786 between integration and automation. These values are below the 0.80 level at which multicollinearity becomes a serious concern, but they are high enough that the bivariate coefficients cannot be interpreted as independent effects. A firm that integrates its systems also tends to automate approvals and to share forecasts, so the correlation of any single practice with performance partly reflects the others. This is why regression was used to assess relative influence.

Table 6: Correlation Matrix of Study Variables

Variable	DSI	ECS	SIS	AUT	PP
DSI	1	—	—	—	—
ECS	0.753**	1	—	—	—
SIS	0.719**	0.768**	1	—	—
AUT	0.786**	0.775**	0.786**	1	—
PP	0.765**	0.770**	0.785**	0.796**	1

Note. ** $p < 0.01$ (two-tailed). All correlations among the four practices and procurement performance were significant at the 0.01 level.

Multiple Regression Analysis

Multiple linear regression was used to estimate the joint and unique influence of the four practices on procurement performance, with firm size and length of DSRM use entered as controls. The model was significant overall, $F(6, 131) = 64.08$, $p < 0.001$, and explained 74.6 per cent of the variance in procurement performance ($R^2 = 0.746$, adjusted $R^2 = 0.734$). The adjusted value, which penalises the model for the number of predictors, indicates that the explanatory power is not an artefact of the number of variables entered.

Table 7: Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin Watson
.864[a]	.746	.734	0.318	1.861

a. Predictors: (Constant), DSI, ECS, SIS, ASM

b. Dependent Variable: PP

Table 8: Analysis of Variance

Source	Sum of squares	df	Mean square	F	Sig.
Regression	6	34.028	5.671	64.08	< .001
Residual	131	11.592	0.088		
Total	137	45.620			

Table 9 reports the coefficients. All four practices were positively and significantly associated with procurement performance. Supplier information sharing recorded the largest standardized effect

(β = 0.275, SE = 0.077, t = 3.574, p < 0.001, 95% CI [0.123, 0.427]), followed by automation of supplier management (β = 0.236, SE = 0.082, t = 2.871, p = 0.005, 95% CI [0.073, 0.399]), digital supplier integration (β = 0.223, SE = 0.075, t = 2.983, p = 0.003, 95% CI [0.075, 0.371]) and electronic communication systems (β = 0.174, SE = 0.079, t = 2.204, p = 0.029, 95% CI [0.018, 0.329]).

Neither control variable reached significance. Firm size returned a coefficient of −0.070 (p = 0.297) and length of DSRM use a coefficient of −0.063 (p = 0.070). The negative signs are of interest because they run contrary to the expectation that larger firms and longer experience should perform better. Neither is statistically distinguishable from zero at the conventional level, so the finding is best interpreted as evidence that procurement performance in this sample was governed by practice rather than by scale or longevity.

Table 9: Regression Coefficients

Predictor	B	Std. error	t	Sig.	95% CI	VIF
(Constant)	0.503*	0.201	2.502	.013	[0.106, 0.900]	—
Digital supplier integration	0.223**	0.075	2.973	.003	[0.075, 0.371]	3.117
Electronic communication systems	0.174*	0.079	2.203	.029	[0.018, 0.329]	3.324
Supplier information sharing	0.275**	0.077	3.571	< .001	[0.123, 0.427]	3.201
Automation of supplier management	0.236**	0.082	2.878	.005	[0.073, 0.399]	3.840
Firm size (control)	-0.070	0.067	-1.045	.297	[-0.203, 0.062]	1.035
Length of DSRM use (control)	-0.063	0.035	-1.800	.070	[-0.132, 0.005]	1.025

Note. * $p < 0.01$, p < 0.05. Dependent variable: procurement performance.

The estimated model is therefore:

$$PP = 0.503 + 0.223DSI + 0.174ECS + 0.275SIS + 0.236AUT - 0.070FS - 0.063TU$$

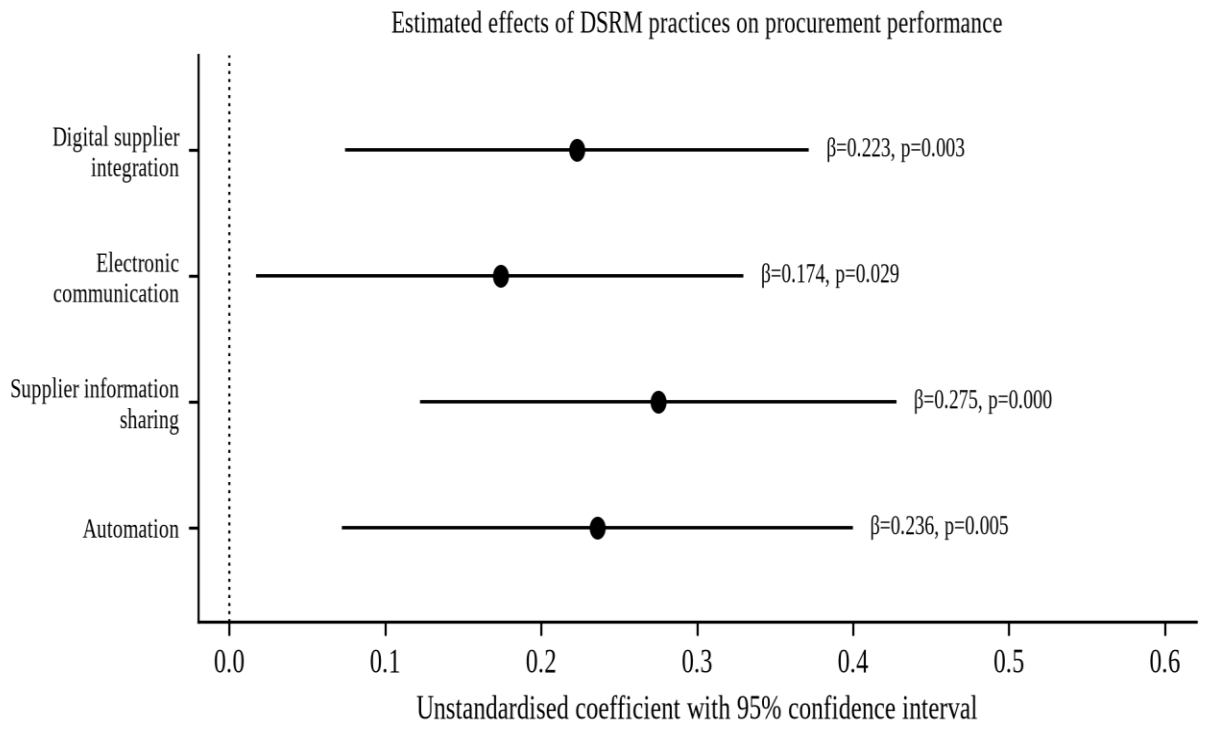


Figure 2: Regression coefficients with 95% confidence intervals

Figure 2 plots the four practice coefficients with their confidence intervals. The intervals for all four lie entirely above zero, which is the graphical counterpart of the significance tests, while the overlapping intervals indicate that the ordering of the coefficients should be interpreted with caution: information sharing has the largest point estimate, but its confidence interval overlaps those of automation and integration.

Test of Hypotheses

Table 10 summarizes the outcome of the hypothesis tests at the 0.05 level of significance. All four null hypotheses were rejected. Notably, electronic communication systems, which produced the smallest coefficient, nonetheless reached significance, which indicates that even the least differentiating practice contributes independently to performance once the others are controlled for.

Table 10: Summary of Hypothesis Test Results

Hypothesis	Statement	Test statistic	Decision
$H0_1$	DSI has no significant influence on procurement performance	$\beta = 0.223$, $p = .003$	Rejected
$H0_2$	ECS has no significant influence on procurement performance	$\beta = 0.174$, $p = .029$	Rejected
$H0_3$	SIS has no significant influence on procurement performance	$\beta = 0.275$, $p < .001$	Rejected
$H0_4$	AUT has no significant influence on procurement performance	$\beta = 0.236$, $p = .005$	Rejected

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

Summary of Findings

The study examined the influence of four digital supplier relationship management practices on procurement performance among large manufacturing firms in Nairobi County, using data from 138 procurement officers in 155 firms (response rate 79.8 per cent) collected through a validated questionnaire and analysed with descriptive statistics, correlation and multiple regression. All four practices were implemented to a moderate extent (construct means of 3.39 to 3.42 out of 5.00) and all exerted a positive and significant influence on procurement performance. Supplier information sharing had the strongest effect ($\beta = 0.275$, $p < 0.001$), followed by automation of supplier management ($\beta = 0.236$, $p = 0.005$) and digital supplier integration ($\beta = 0.223$, $p = 0.003$), while electronic communication systems had the smallest coefficient ($\beta = 0.174$, $p = 0.029$).

Taken together, the four practices explained 74.6 per cent of the variance in procurement performance ($R^2 = 0.746$, adjusted $R^2 = 0.734$), and the model was significant overall, $F(6, 131) = 64.08$, $p < 0.001$. Information sharing mattered even though most firms stopped short of sharing contract and pricing data, and respondents were more confident about the speed of electronic communication than the integrity of the documents transmitted. Neither firm size nor length of DSRM use was significantly associated with performance, indicating that the practices themselves, rather than scale or longevity, were the operative factor, and all four null hypotheses were rejected.

Conclusions

The study concluded that digital supplier relationship management is positively associated with procurement performance among large manufacturing firms in Nairobi County, strongly enough to be of practical as well as statistical significance. A model containing the four practices accounted for approximately three-quarters of the variation in reported performance, a large share by the standards of survey research in operations management, which suggests that these practices are close to the operative determinants of procurement outcomes in this population. The practices are not interchangeable: their coefficients differed in a theoretically meaningful order, with those that build relation-specific assets and reduce uncertainty, namely information sharing and automation, contributing more than those that digitalize existing administrative exchange. This supports the Resource-Based View proposition that advantage derives from accumulated, embedded capability rather than purchasable technology, and implies that investment in one practice cannot substitute for investment in another.

The study further concluded that adoption in Nairobi manufacturing remains partial. Construct means of 3.39 to 3.42 out of 5.00, and the concentration of system adoption in the 2022 to 2024 period, indicate a sector in transition, so the benefits observed were obtained at intermediate levels of implementation and further gains remain available to firms that complete the transition. Finally, scale and longevity were not substitutes for practice: larger firms did not outperform smaller ones, and firms with longer experience of DSRM did not outperform recent adopters. The justification for digital investment therefore lies in how comprehensively the practices are embedded, not in how large the firm is or how long the system has been installed.

Recommendations

Practitioners should prioritize supplier information sharing, which produced the largest effect and requires the least capital, by institutionalizing the regular transmission of rolling demand forecasts and supplier scorecards and moving from consultation toward shared visibility of contract and performance data. Automation should be extended beyond approving low-value requisitions to automatic re-order triggering, with inventory record accuracy treated as an enabling investment. On integration, the priority is completion rather than initiation: firms should fund system interconnection with their ten to fifteen most strategic suppliers instead of pursuing uniform integration across the whole supply base. Electronic communication should be maintained but not expanded as a performance strategy, since its contribution is real but smallest, and further gains lie in replacing document-carrying messages with integration so that communication carries exceptions only.

At the sector and policy level, the Kenya Association of Manufacturers should sponsor a common supplier connectivity standard and a shared portal that lets small and medium suppliers transact with multiple member firms, and should establish an anonymized benchmarking service, since the

wide standard deviations observed, particularly on cycle time, show that firms assess themselves very differently. Policymakers should continue investing in reliable connectivity and secure payment rails, for which the findings give a manufacturing-specific justification, and should avoid a compliance-only approach, because mandating a statutory platform without addressing supplier capability will produce installation without performance. Public programmes should therefore include capacity building for small suppliers. Suppliers, for their part, should treat digital readiness as a commercial capability: those able to receive and acknowledge orders and share performance data electronically position themselves for preferred status, while those that cannot will increasingly be managed through low-touch, transactional processes regardless of price.

Contribution of the Study

The study contributes to theory, practice and policy. Theoretically, it offers a tested integration of the Resource-Based View (the source of advantage), Transaction Cost Theory (the mechanism) and the Technology Acceptance Model (variance in realization), rather than a parallel review of them, and it extends the Resource-Based View to a developing-economy setting by showing that relational practices outperform transactional ones even where technological infrastructure is uneven. For practice, it provides a ranking of alternatives: information sharing and automation offer more return per unit of investment than communication infrastructure, and integration should target strategic suppliers rather than the whole supply base, which is more actionable than the general finding that digitalization helps. For policy, it shows that installing systems is not the same as realizing benefits and that scale and longevity are unreliable indicators of success, supporting policies that build capability on both sides of the transaction rather than mandating platform use on one side only.

Limitations of the Study

The study was confined to large manufacturers in Nairobi County affiliated to the Kenya Association of Manufacturers, so small and medium firms and non-members are not represented and the findings should not be generalized to the whole sector without qualification. Its cross-sectional design prevents causal inference, since firms with strong procurement performance may invest more in digital practices because they have the resources to do so. Performance was measured perceptually rather than from audited records, and the high share of neutral responses, about one-third on most items, may reflect cautious self-reporting. Finally, the model explained 74.6 per cent of variance, leaving a quarter unexplained, which may partly reflect omitted factors such as supplier bargaining power, regulatory compliance costs, exchange rate volatility and internal data quality.

Suggested Area for Further Research

Five directions follow from the limitations. A comparative study of small and medium manufacturers would test whether the ordering of practice effects holds where resources and

supplier bases are more constrained, and a longitudinal study tracking firms through their integration programmes would permit causal claims and show whether effects strengthen as adoption deepens. A dyadic study with matched data from manufacturers and their strategic suppliers would measure integration from both sides and test whether supplier-side capability conditions the buyer's gains, while linking perceptual measures to audited procurement records in a subsample would validate the instrument against objective data. A fifth, policy-oriented direction is to study the effect of the e-Government Procurement system on the private suppliers who must use it, which would test whether the ordering of practice effects changes when adoption is compulsory rather than strategic.

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