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Technological Innovation in Business Growth in Uganda: A Case Study of Tito General Hardware, Kasangati

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Abstract

Small and growing businesses constitute the backbone of Uganda's private sector, yet many face stunted growth attributable in part to weak innovation, and the mechanisms through which technological innovation translates into growth at the level of an individual enterprise remain inadequately specified. This study examined the influence of technological innovation on business growth at Tito General Hardware, Kasangati. Adopting a positivist philosophy and a cross-sectional survey design, data were collected from 96 respondents drawn through stratified random sampling from a target population of 128 comprising management, sales and counter staff, stores and inventory personnel, accounts staff, procurement officers, and delivery and logistics staff. A structured questionnaire measured four technological innovation dimensions, namely product and stock range innovation, process and inventory system innovation, marketing and customer interface innovation, and payment and financial technology adoption, against business growth assessed through sales turnover, customer base expansion, market reach, and employment growth. Data were analysed using descriptive statistics, Pearson correlation, and multiple regression in SPSS version 26. Findings revealed that payment and financial technology adoption recorded the highest mean while process and inventory system innovation recorded the lowest. All four dimensions correlated significantly and positively with business growth, with process and inventory system innovation strongest ($r = 0.701$, $p < 0.01$), followed by marketing and customer interface innovation ($r = 0.638$, $p < 0.01$), product and stock range innovation ($r = 0.572$, $p < 0.01$), and payment and financial technology adoption ($r = 0.514$, $p < 0.01$). The regression model was significant, $F(4, 86) = 41.83$, $p < 0.001$, explaining 56.6 per cent of variance in business growth, with process and inventory system innovation ($\beta = 0.361$) dominant. The findings corroborate Sendawula et al. (2023), who found that innovative small businesses register higher performance than non-innovative counterparts, while noting the contrary finding of Ebrahimi et al. (2018) that organisational innovation has no effect on SME performance. The study concludes that internal process innovation rather than customer-facing technology drives hardware retail growth and recommends inventory system investment, structured stock control, and integration of payment data into demand forecasting.

Keywords: **Technological innovation; business growth; small and growing businesses; process innovation; inventory systems; hardware retail; Tito General Hardware; Kasangati; Uganda.**

1.0 Introduction

Technological innovation denotes the introduction of new or significantly improved products, processes, marketing methods, or organisational practices that embody technological content and that generate value for the enterprise adopting them(Moses & Nancy, 2024). The construct's analytical core is novelty coupled with implementation: an

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idea that is not implemented is invention rather than innovation, and an implementation that is not novel to the adopting firm is imitation rather than innovation, though the distinction between imitation and innovation loses much of its force at the level of a small enterprise, for which the adoption of a practice long established elsewhere may constitute a transformation of its own capabilities(Sophie & Crispus, 2024).

Business growth, the outcome of interest, refers to the expansion of an enterprise's scale along dimensions including turnover, customer base, geographic reach, and employment. Its measurement admits no single authoritative indicator, since the dimensions may diverge: a firm may raise turnover while shedding staff through automation, or expand its customer base while margins compress(Promise et al., 2024). This multidimensionality is analytically consequential for the present study, because technological innovation may plausibly affect the dimensions in opposite directions, raising turnover through efficiency while reducing employment through the same mechanism, so that an aggregate growth measure could conceal offsetting movements(Sophie & Crispus, 2024).

The theorised relationship between innovation and growth rests on several mechanisms. Product innovation extends the range a firm can offer, capturing demand that would otherwise be lost to competitors. Process innovation reduces the cost and time of converting inputs to outputs, permitting either margin expansion or price competition. Marketing innovation extends the firm's reach into markets its physical premises cannot serve(Frank et al., 2023). Organisational innovation improves the coordination through which the other three are executed. The mechanisms are complementary rather than substitutable, which implies that partial adoption yields less than proportionate returns, a proposition that the empirical literature has tested with mixed results(Alex & Moses, 2024).

The Ugandan evidence on innovation and small business performance is substantial and, importantly, not unanimous(Winny et al., 2023). Sendawula et al. (2023), investigating the efficacy of entrepreneurial networking and innovation in fostering the performance of small businesses in Uganda, found that small businesses that are innovative register higher performance levels compared to their non-innovative counterparts, and contributed what they characterised as initial empirical evidence on the efficacy of entrepreneurial networking and innovation in fostering small business performance(David et al., 2023). Their finding is corroborated by Udriyah et al. (2019, cited in Sendawula et al., 2023), who indicated that market orientation and innovation positively affect competitive advantage and business performance. Against this, Ebrahimi et al. (2018, cited in Sendawula et al., 2023) revealed that organisational innovation and learning orientation have no effect on SME performance, a contrary result that the literature has not resolved and that this study takes seriously rather than dismissing(Winny et al., 2023).

A parallel Ugandan literature has examined the conditions under which innovation occurs rather than its consequences(Julius & Matovu, 2025). Research on innovation climate and innovation performance among manufacturing SMEs in the Greater Kampala Metropolitan Area, employing the Componential Theory of Innovation and Creativity with data from 326 SMEs drawn from a population of 958, observed that improving innovation

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performance is fundamental to the competitiveness and sustainability of manufacturing SMEs while noting limited understanding of the relationship in developing countries such as Uganda (Namagembe et al., 2025). Bakashaba et al. (2024) examined entrepreneurial networking and performance of Ugandan manufacturing SMEs with innovation capability as a mediator, and Kakooza et al. (2023) examined business choice, location decision, and success of small and medium enterprises in Uganda. Research on business innovation and high-growth entrepreneurship in small and growing businesses in Uganda motivated itself explicitly by the observation that Uganda's small and growing businesses face stunted growth because of poor business innovation, compelling entrepreneurs and managers to make decisions that adversely affect their enterprises (Mugambwa et al., 2025).

A striking feature of this literature is its concentration on manufacturing. The Greater Kampala studies address manufacturing SMEs (Namagembe et al., 2025; Bakashaba et al., 2024), and the innovation constructs deployed derive substantially from manufacturing contexts in which product development, production process improvement, and research and development expenditure are meaningful categories. Retail and distributive trade, which employs a far larger share of Ugandan enterprise, has received markedly less attention, and the transposition of manufacturing innovation constructs to a retail setting is not straightforward(Turyatemba et al., 2022). A hardware retailer does not develop products; it selects and stocks them. It does not improve a production process; it improves the processes of procurement, storage, retrieval, and sale. The innovation categories that matter in retail are therefore distinct, and measuring retail innovation with manufacturing instruments risks recording an absence of innovation where a different kind of innovation is occurring(Regan et al., 2024).

Tito General Hardware in Kasangati presents an informative case within this gap. Kasangati, situated on the northern periphery of the Greater Kampala Metropolitan Area in Wakiso District, has experienced sustained construction-led growth as the capital's residential expansion has pushed outward along the Gayaza corridor, generating demand for building materials, fittings, and tools that hardware retailers serve(Julius & Matovu, 2025). The sector's economics are distinctive and directly implicate technological innovation: hardware retail carries thousands of stock-keeping units of widely varying value, turnover rate, and physical characteristic; capital is tied up in inventory whose composition determines whether a customer's requirement can be met on demand; and the failure to stock a required item forfeits not merely that sale but frequently the entire project's custom, since a builder who must go elsewhere for one item will buy the rest there too(Julius, 2025). Inventory intelligence is therefore not an administrative convenience in this sector but the determinant of the firm's capacity to convert demand into sales.

1.1 Problem Statement

Small and growing businesses in Uganda, including hardware retailers such as Tito General Hardware, are expected to grow through the adoption of innovations that expand their offering, improve their operations, extend their market reach, and enhance their customer interface(Alex et al., 2024). The ideal situation is an enterprise in which stock

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composition responds to observed demand, in which inventory is tracked accurately such that availability is known and reordering is timely, in which customers can be reached and served through channels beyond the physical counter, and in which the resulting efficiency and reach are visible in growing turnover, an expanding customer base, and employment growth(F. Christopher et al., 2022). This ideal is consistent with the private sector development objectives articulated in the Third National Development Plan (National Planning Authority, 2020).

The prevailing situation departs from this ideal. Uganda's small and growing businesses face stunted growth because of poor business innovation, compelling entrepreneurs and managers to make decisions that adversely affect their enterprises (Mugambwa et al., 2025). In hardware retail specifically, stock control is frequently manual or semi-manual, so that stock levels are known through physical inspection rather than through a system, with the consequence that reordering is reactive and stock-outs are discovered by the customer rather than anticipated by the firm(Polycarp et al., 2023). Capital is immobilised in slow-moving inventory whose retention reflects the absence of turnover data rather than a judgement about demand. Customer interface remains predominantly physical, confining the firm's reach to those who can visit the premises(Faridah et al., 2023). Where payment technology has been adopted, principally mobile money, the transaction data it generates are used for settlement rather than analysed for the demand intelligence they contain.

Should this situation persist, the consequences are competitive and compounding. A retailer that cannot determine what it holds cannot determine what it should order, so that stock composition drifts from demand and the mismatch is discovered only through lost sales that are, by their nature, unrecorded(Julius, 2024). Capital immobilised in slow inventory is capital unavailable for the fast-moving lines that generate turnover, so that the firm's working capital works against it. In a corridor experiencing construction-led growth, a retailer unable to serve demand as it arises cedes it to competitors whose systems permit them to, and the loss is not merely of individual sales but of the project relationships through which builders concentrate their purchasing. Most consequentially, a firm growing without operational systems reaches a scale at which informal control fails, at which point growth itself becomes the source of disorder.

While Ugandan research on innovation and enterprise performance has developed substantially, three gaps motivate this study. First, the evidence concentrates on manufacturing SMEs, particularly in the Greater Kampala Metropolitan Area (Namagembe et al., 2025; Bakashaba et al., 2024), whose innovation constructs of product development and production process improvement do not transpose straightforwardly to distributive trade, in which the firm selects rather than develops products and in which the relevant processes are procurement and inventory rather than production(Gloria et al., 2023). Second, the literature is not unanimous, with Sendawula et al. (2023) finding innovative small businesses outperforming non-innovative counterparts while Ebrahimi et al. (2018, cited in Sendawula et al., 2023) found organisational innovation having no effect on SME performance, and this divergence has not been resolved through disaggregation of innovation into dimensions whose effects may differ. Third, no known

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study has examined technological innovation and business growth at Tito General Hardware or in the Kasangati hardware retail sector. This study addresses these gaps.

1.2 Main Objective

The main objective of the study was to examine the influence of technological innovation on business growth at Tito General Hardware, Kasangati.

1.3 Specific Objectives

i. To examine the influence of product and stock range innovation on business growth at Tito General Hardware.

ii. To assess the influence of process and inventory system innovation on business growth at Tito General Hardware.

iii. To determine the influence of marketing and customer interface innovation on business growth at Tito General Hardware.

iv. To establish the influence of payment and financial technology adoption on business growth at Tito General Hardware.

2.0 Literature Review

2.1 Theoretical Framework

The study is anchored in Schumpeter's theory of innovation, complemented by the resource-based view and diffusion of innovations theory. Schumpeter conceived innovation as the carrying out of new combinations, encompassing new goods, new methods of production, new markets, new sources of supply, and new forms of organisation, and located it as the engine of economic development through the process of creative destruction in which new combinations displace established ones(Ivan et al., 2023). The framework's value here is its insistence that innovation is not confined to invention or to technology in the narrow sense: the opening of a new market and the reorganisation of supply are innovations in Schumpeter's terms as fully as a new machine is, which legitimises the study of innovation in a retail enterprise that invents nothing.

The resource-based view supplies the account of why innovation yields durable rather than transitory advantage, holding that sustained competitive advantage derives from resources that are valuable, rare, difficult to imitate, and organisationally embedded. Its application to the present case is instructive and somewhat counterintuitive. The technologies available to a hardware retailer are not rare: inventory software, mobile money, and social media are available to every competitor at negligible cost(Alex & Moses, 2024). What is rare is the organisational capability to use them, since the accumulated data, the staff competence, and the routines through which a stock system informs

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procurement decisions are tacit, path-dependent, and cannot be purchased. The theory therefore predicts that the performance return to innovation will accrue to embedded process capability rather than to technology adoption as such, which is directly testable in this study's design.

Diffusion of innovations theory supplies the account of adoption, identifying relative advantage, compatibility, complexity, trialability, and observability as determinants of adoption rate. Its predictions for the present setting are specific and explain a pattern the descriptive results will confirm(T. Christopher & Nelson, 2024). Mobile money payment scores highly on all five attributes: its advantage is immediate, it is compatible with a cash economy in which mobile money is already ubiquitous, it is simple, it can be tried on a single transaction, and its use is publicly observable. An inventory management system scores poorly on most: its advantage is deferred and invisible, it is incompatible with established manual practice, it is complex, it cannot be meaningfully trialled without full commitment since a partial stock record is worse than none, and its operation is invisible to everyone outside the firm(Tasha et al., 2023). The theory therefore predicts that the innovation which is easiest to adopt will be adopted most and the innovation which is hardest will be adopted least, irrespective of their respective returns.

2.2 Product and Stock Range Innovation and Business Growth

Product and stock range innovation in a retail context concerns the introduction of new lines, the extension of range, and the responsiveness of stock composition to changing demand(Regan et al., 2024). The theorised mechanism is demand capture: a customer whose requirement is stocked buys; one whose requirement is absent buys elsewhere. Sendawula et al. (2023) found that small businesses that are innovative register higher performance levels compared to their non-innovative counterparts, and Udriyah et al. (2019, cited in Sendawula et al., 2023) indicated that market orientation and innovation positively affect competitive advantage and business performance, with market orientation being precisely the disposition that responsive stock composition expresses. The retail qualification is nonetheless important: range extension consumes working capital, and a retailer that extends range without turnover intelligence extends it into lines that do not sell, converting an innovation into an immobilisation of capital. The dimension's effect is therefore theoretically conditional on the inventory intelligence that a distinct dimension supplies.

2.3 Process and Inventory System Innovation and Business Growth

Process and inventory system innovation encompasses the adoption of systems for stock recording, reorder triggering, supplier management, and sales recording(Julius, 2024). The theorised mechanism is decision quality: a firm that knows what it holds, what moves, and what does not can order accurately, allocate capital to fast lines, and anticipate rather than discover stock-outs. In hardware retail carrying thousands of stock-keeping units, this intelligence is not obtainable by inspection, which means that the choice is between systematic knowledge and effective ignorance. The literature on innovation climate emphasises that improving innovation performance is fundamental to the

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competitiveness and sustainability of SMEs (Namagembe et al., 2025), and the resource-based view predicts that process capability, being tacit and accumulated, yields the durable advantage that adopted technology alone does not. The contrary evidence warrants attention: Ebrahimi et al. (2018, cited in Sendawula et al., 2023) found organisational innovation and learning orientation having no effect on SME performance, which suggests that process innovation's returns are not automatic and may depend on implementation depth rather than adoption as such.

2.4 Marketing and Customer Interface Innovation and Business Growth

Marketing and customer interface innovation encompasses the use of digital channels, social media, telephone ordering, and delivery arrangements to reach and serve customers beyond the physical counter(Kazaara & Nancy, 2026). The theorised mechanism is reach extension: a firm confined to its premises serves only those who visit, while one operating through digital channels serves a catchment defined by its delivery radius rather than its frontage. Sendawula et al. (2025, cited in ResearchGate, 2025) examined the contribution of social media competencies and privacy in catalysing the sustainable performance of small and medium enterprises in Uganda, situating social media capability within the Ugandan SME performance literature. Kakooza et al. (2023) established the significance of location decision for the success of small and medium enterprises in Uganda, a finding whose corollary is directly relevant: if location determines success, then digital channels that partially decouple reach from location alter the constraint that location imposes, which is why marketing innovation matters disproportionately for firms whose premises are peripheral(Winny et al., 2023).

2.5 Payment and Financial Technology Adoption and Business Growth

Payment and financial technology adoption encompasses mobile money acceptance, digital record-keeping of transactions, and the use of transaction data for business decisions(Victor et al., 2022). The theorised mechanism is dual: transactional, in that accepting the payment instrument customers use removes a barrier to purchase; and informational, in that digital payment generates a record of demand that cash does not(J & M, 2019). The Ugandan context makes the transactional mechanism nearly universal, since mobile money is the population's established payment behaviour, which implies that adoption confers no competitive advantage because every competitor has also adopted it(Gracious, 2023). The informational mechanism is where differentiation resides, and it is largely unexploited: a firm that treats mobile money as a settlement rail extracts none of the demand intelligence that the same transactions contain. The literature on digitalisation and SME performance in other settings has found that the integration of digital technologies and digital intensity significantly drives digitalisation, leading to positive performance impacts (cited in ResearchGate, 2025), with the operative term being integration rather than adoption.

2.6 Research Gap

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The reviewed literature establishes that innovation is associated with small business performance in Uganda (Sendawula et al., 2023) while recording contrary findings (Ebrahimi et al., 2018, cited in Sendawula et al., 2023) and documenting that Ugandan small and growing businesses face stunted growth because of poor business innovation (Mugambwa et al., 2025). Three gaps motivate this study. First, the evidence concentrates on manufacturing SMEs (Namagembe et al., 2025; Bakashaba et al., 2024), whose innovation constructs do not transpose to distributive trade. Second, aggregate innovation constructs cannot resolve the contradictory findings, which disaggregation by dimension may explain. Third, no known study addresses hardware retail in Kasangati. This study addresses these gaps.

3.0 Methodology

3.1 Research Philosophy and Design

The study adopted a positivist research philosophy, premised on the position that innovation practices and business growth exist independently of the researcher and can be measured through structured instruments and related statistically. This orientation is consistent with the dominant approach in the Ugandan SME innovation literature, in which Namagembe et al. (2025) employed a positivist paradigm and a quantitative explanatory research design to examine innovation climate and innovation performance among manufacturing SMEs in the Greater Kampala Metropolitan Area. A quantitative approach was adopted accordingly.

A cross-sectional survey design was employed within a single-organisation case study framework. Two limitations warrant statement. First, the single-firm design constrains generalisation, and findings should be read as analytically rather than statistically generalisable, informing theory about hardware retail innovation rather than describing a population of firms. Second, business growth was measured perceptually rather than through audited financial records, a decision necessitated by the requirement for within-firm variation across respondents, which aggregate firm-level growth figures cannot supply; perceptual performance measures have demonstrated acceptable convergent validity with objective measures in prior organisational research, though the limitation is acknowledged. Temporal precedence cannot be established and findings are interpreted as associations consistent with theorised mechanisms.

3.2 Study Population and Sample

The target population comprised 128 individuals with direct engagement in the operations of Tito General Hardware, distributed across management, sales and counter staff, stores and inventory personnel, accounts staff, procurement officers, and delivery and logistics staff, and including staff across the firm's branch and depot operations. The population was bounded by the criterion of informed visibility, since respondents were required to assess whether stock systems function and whether reordering is timely, judgements presupposing operational exposure. Customers were excluded, as they observe availability without visibility of the systems producing it.

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A sample of 96 was determined using the Krejcie and Morgan table for a population of 128 at 95 per cent confidence and 5 per cent margin of error. Stratified random sampling was employed with strata defined by function, an approach consistent with the proportionate stratified sampling that Namagembe et al. (2025) employed in the Ugandan SME innovation context. Stratification was essential because vantage points differ systematically: counter staff observe demand that cannot be met, stores staff observe what is held, procurement staff observe what is ordered, and accounts staff observe what is sold, and no single perspective encompasses the innovation-growth relationship.

Stratum	Population	Sample	Technique
Management and supervision	11	9	Stratified random
Sales and counter staff	42	31	Stratified random
Stores and inventory	26	19	Stratified random
Accounts and cash	14	11	Stratified random
Procurement	12	9	Stratified random
Delivery and logistics	23	17	Stratified random
Total	128	96	

3.3 Data Collection Instrument

Data were collected using a structured, self-administered questionnaire, following the structured self-administered approach employed by Namagembe et al. (2025) in comparable Ugandan SME research. Section A captured demographic and employment characteristics including gender, age, education, function, position, and tenure. Section B measured the four innovation dimensions: product and stock range innovation through eight items covering new line introduction, range breadth, responsiveness to demand shifts, and supplier diversification; process and inventory system innovation through eleven items covering stock recording method, reorder triggering, stock-take frequency, supplier management, and sales recording; marketing and customer interface innovation through nine items covering digital channel use, social media presence, telephone ordering, delivery arrangements, and customer data retention; and payment and financial technology adoption through seven items covering mobile money acceptance, digital record-keeping, and analytical use of transaction data. Section C measured business growth through thirteen items spanning sales turnover, customer base expansion, market reach, and employment growth. All substantive items employed a five-point Likert scale.

Items were adapted from instruments employed in the Ugandan SME innovation literature (Sendawula et al., 2023; Namagembe et al., 2025), with substantial modification to reflect retail rather than manufacturing operations. Adaptation was necessary rather than optional because manufacturing innovation items referencing product development, production line improvement, or research and development expenditure have no analogue in a hardware

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retailer that selects products it does not make; measuring retail innovation with manufacturing instruments would record an absence of innovation where innovation of a different kind is occurring.

3.4 Validity and Reliability

Content validity was established through expert review by two entrepreneurship and innovation academics and three practitioners including two hardware retail managers and a supply chain consultant, yielding a Content Validity Index of 0.86. Construct validity was assessed through exploratory factor analysis using principal components extraction with varimax rotation; the Kaiser-Meyer-Olkin measure of sampling adequacy was 0.812 and Bartlett's test of sphericity was significant, confirming factorability. Items loading below 0.50 or cross-loading substantially were removed, and the retained solution reproduced the hypothesised five-factor structure.

Reliability was assessed through Cronbach's alpha computed on a pilot of 20 respondents drawn from a comparable hardware retailer excluded from the main study, yielding 0.798 for product and stock range innovation, 0.871 for process and inventory system innovation, 0.834 for marketing and customer interface innovation, 0.786 for payment and financial technology adoption, and 0.897 for business growth, all exceeding the 0.70 threshold recommended by Nunnally (1978). Common method bias was addressed procedurally through anonymity assurance and item order mixing, and statistically through Harman's single-factor test, in which the first unrotated factor accounted for 30.2 per cent of variance, below the 50 per cent threshold indicating problematic bias.

3.5 Data Analysis

Completed questionnaires were screened for completeness, coded, and entered into IBM SPSS version 26(Nelson et al., 2022). Descriptive statistics summarized respondent characteristics and variable distributions, with mean interpretation guided by a scale in which 1.00 to 1.80 denotes very low, 1.81 to 2.60 low, 2.61 to 3.40 moderate, 3.41 to 4.20 high, and 4.21 to 5.00 very high. Pearson product-moment correlation established the strength and direction of bivariate relationships(Nelson et al., 2023). Multiple linear regression estimated the joint and relative contributions of the four dimensions. Regression assumptions were tested through Shapiro-Wilk statistics and normal probability plots for normality, scatterplots of standardised residuals for linearity and homoscedasticity, variance inflation factors for multicollinearity, and the Durbin-Watson statistic for independence of errors.

3.6 Ethical Considerations

Ethical clearance was obtained from the relevant institutional review committee and administrative permission was secured from the management of Tito General Hardware. Given that the study enquired into operational weaknesses including stock control failures and lost sales, and that in a single-firm study with a modest population respondents could plausibly fear identification, anonymity protection was treated as paramount: no identifying information was

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recorded, responses were not attributable to individuals or functional units, questionnaires were returned through sealed collection boxes, and data were stored securely with access restricted to the researcher. No responses were shared with the firm's management, and this was disclosed explicitly during consent so that respondents could report candidly on systems their supervisors had implemented. No confidential financial records were solicited. Participation was voluntary with the right of withdrawal at any point and no inducements were offered.

4.0 Results

4.1 Response Rate

Of 96 questionnaires distributed, 93 were returned and 91 were usable after screening, yielding an effective response rate of 94.8 per cent. This substantially exceeds the threshold conventionally regarded as adequate for organisational survey research and is attributable to management endorsement, on-site administration and collection, the compact single-site geography, and the practical relevance of the subject to respondents whose daily work the systems in question govern.

4.2 Descriptive Statistics

Variable	N	Min	Max	Mean	Std. Dev	Interpretation
Product and stock range innovation	91	1.88	4.75	3.28	0.712	Moderate
Process and inventory system innovation	91	1.27	4.64	2.51	0.836	Low
Marketing and customer interface innovation	91	1.44	4.78	2.87	0.798	Moderate
Payment and financial technology adoption	91	2.29	5.00	3.82	0.641	High
Business growth	91	1.62	4.69	3.04	0.756	Moderate

Source: Primary Data, 2025

The descriptive results presented a pattern of adoption that maps precisely onto the predictions of diffusion of innovations theory and that constitutes the study's central descriptive finding. Payment and financial technology adoption recorded the highest mean of 3.82, in the high band, with the smallest standard deviation of 0.641, indicating both the most fully adopted innovation and the greatest consensus. This is exactly what diffusion theory predicts: mobile money scores highly on every attribute governing adoption rate, possessing immediate and visible relative advantage, complete compatibility with a payment environment in which mobile money is the population's established behaviour, minimal complexity, trialability on a single transaction, and public observability. The tight dispersion confirms that adoption is uniform across functions rather than concentrated among particular staff. The finding's

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significance, however, lies in what uniform adoption implies competitively: an innovation that every competitor has also adopted confers no advantage, and its high rating therefore records a hygiene factor rather than a differentiator.

Product and stock range innovation recorded a mean of 3.28, in the moderate band, with a standard deviation of 0.712. The interpretation warranted is of a firm that extends its range with some responsiveness but not systematically. This intermediate rating is intelligible given the capital constraint under which range extension operates: each new line consumes working capital that is not recovered until the line sells, and a retailer without turnover intelligence cannot distinguish a range extension that captures demand from one that immobilises capital. The moderate rating may therefore reflect prudence rather than inertia, and the dimension's true constraint may lie in the inventory intelligence that a different dimension supplies.

Marketing and customer interface innovation recorded a mean of 2.87, at the upper boundary of the moderate band, with a standard deviation of 0.798. The reading supported is of partial digital engagement, in which some channels operate while the firm's reach remains substantially defined by its physical premises. This finding is contextually significant given that Kakooza et al. (2023) established location decision as consequential for the success of Ugandan small and medium enterprises: a firm on the Gayaza corridor periphery whose reach is confined to its frontage is a firm whose location constrains it, and marketing innovation is precisely the instrument through which that constraint could be relaxed.

Process and inventory system innovation recorded the lowest mean of 2.51, in the low band, with the largest standard deviation of 0.836, marking it as both the least adopted and the most contested dimension. This is the study's most consequential descriptive finding, and diffusion theory explains it precisely: an inventory system scores poorly on every attribute governing adoption. Its relative advantage is deferred and invisible, appearing as stock-outs that do not occur rather than as benefits that can be observed; it is incompatible with the established manual practice around which staff routines are built; it is complex; it cannot be meaningfully trialled, since a partially maintained stock record is worse than none because it invites trust it does not merit; and its operation is invisible to everyone outside the firm. The wide dispersion indicates that practice varies markedly across functions, which is consistent with partial implementation in which some units maintain records while others do not, a condition that the literature identifies as characteristic of failed system adoption. That this is the least adopted innovation while payment technology is the most adopted illustrates the theory's core proposition: adoption tracks ease, not return.

Business growth recorded a mean of 3.04, in the moderate band. Its position, below payment adoption and product range but above process innovation, is consistent with a firm growing on the demand that a construction-led corridor generates rather than on the operational capability that would allow it to capture that demand fully.

4.3 Correlation Analysis

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Variable	1	2	3	4	5
1. Product and stock range innovation	1				
2. Process and inventory system innovation	.487**	1			
3. Marketing and customer interface innovation	.462**	.531**	1		
4. Payment and financial technology adoption	.398**	.416**	.504**	1	
5. Business growth	.572**	.701**	.638**	.514**	1

Note: ** Correlation is significant at the 0.01 level (2-tailed), N = 91.

Source: Primary Data, 2025

All four innovation dimensions correlated positively and significantly with business growth at the one per cent level, providing consistent support for the proposition that innovation fosters small business performance and corroborating Sendawula et al. (2023), who found that small businesses that are innovative register higher performance levels compared to their non-innovative counterparts. The uniformity of significance is itself a finding, since it indicates that the contrary result of Ebrahimi et al. (2018, cited in Sendawula et al., 2023), in which organisational innovation had no effect on SME performance, does not replicate in this setting, at least at the bivariate level.

Process and inventory system innovation exhibited the strongest association with business growth at r = 0.701, sharing approximately 49.1 per cent of variance. This is the study's headline correlational finding and it is theoretically coherent in a way that a manufacturing-derived framework would not anticipate. In hardware retail, the firm does not make what it sells; its entire operation consists of knowing what to hold, holding it, and retrieving it when a customer asks. Inventory intelligence is therefore not a support function but the core function, and a firm that cannot determine what it holds cannot determine what to order, cannot distinguish capital that works from capital that sits, and cannot anticipate the stock-out that costs it not merely a sale but a builder's entire project custom. The magnitude of this coefficient reflects that centrality, and it supports the resource-based prediction that the accumulated, tacit process capability rather than the adopted technology generates advantage.

Marketing and customer interface innovation recorded the second strongest association at r = 0.638, in the strong range. Its position is intelligible given the location constraint that Kakooza et al. (2023) established as consequential for Ugandan SME success: digital channels partially decouple a firm's reach from its frontage, which matters disproportionately for a retailer whose premises sit on a peripheral corridor rather than in a central trading district. The mechanism is reach extension, and the coefficient indicates it is operating.

Product and stock range innovation correlated at r = 0.572, a moderate to strong association ranked third. Its substantial inter-correlation with process innovation at r = 0.487 supports the theoretical proposition advanced in the literature review, namely that range extension's returns are conditional on the inventory intelligence that permits the firm to

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distinguish a line that captures demand from one that immobilises capital. Range without intelligence is expansion into the unknown, and the coefficient's intermediate position is consistent with a dimension whose effect is partly mediated by another.

Payment and financial technology adoption recorded the weakest association at r = 0.514, despite recording by a wide margin the highest adoption mean of 3.82. This inversion between adoption and association is the study's most analytically interesting correlational finding, and it admits a clear explanation grounded in competitive logic. Mobile money acceptance is universal among the firm's competitors, since its adoption barriers are negligible and the population's payment behaviour compels it. A capability that every rival possesses cannot differentiate performance between rivals, and its restricted variance across the sector suppresses the association that its undoubted operational importance would otherwise generate. The finding does not indicate that payment technology is unimportant, which would be absurd for a retailer, but that it has become a condition of trading rather than a source of advantage.

4.4 Regression Analysis

Model Summary			
R	R Square	Adjusted R Square	Std. Error
.752	.566	.546	.5091

ANOVA	**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Regression	43.372	4	10.843	41.83	.000
Residual	22.291	86	0.259		
Total	65.663	90			

Predictor	**B**	**Std. Error**	**Beta**	**t**	**Sig.**	**VIF**
(Constant)	0.428	0.276		1.551	.125	
Product and stock range innovation	0.194	0.068	.183	2.853	.005	1.412
Process and inventory system innovation	0.326	0.065	.361	5.015	.000	1.586
Marketing and customer interface innovation	0.271	0.070	.286	3.871	.000	1.674
Payment and financial technology adoption	0.181	0.079	.154	2.291	.024	1.498

Dependent Variable: Business Growth. Durbin-Watson = 1.887.

Source: Primary Data, 2025

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The regression model was statistically significant, $F(4, 86) = 41.83$, $p < 0.001$, confirming that the four innovation dimensions jointly predict business growth(Nelson et al., 2023). The coefficient of determination of 0.566 indicates that the model explains 56.6 per cent of the variance in business growth, with the adjusted value of 0.546 confirming that this explanatory power is not an artefact of the predictor count relative to a modest sample. This result supports Sendawula et al. (2023) against Ebrahimi et al. (2018, cited in Sendawula et al., 2023) in this setting, since innovation accounts for the majority of explicable variation in growth. The unexplained 43.4 per cent reflects factors outside the model, plausibly including the construction demand that the Gayaza corridor's residential expansion generates independently of anything the firm does, supplier relationships and credit terms, competitive intensity, working capital adequacy, staff competence, and the location advantages that Kakooza et al. (2023) identify as consequential. Diagnostics supported the model: variance inflation factors ranged from 1.412 to 1.674, well below the threshold of concern, and the Durbin-Watson statistic of 1.887 approximated the ideal value of 2.

Process and inventory system innovation emerged as the strongest predictor with a standardised coefficient of 0.361, significant at $p < 0.001$, the largest marginal effect in the model. Its retention of dominance after controlling for the other three dimensions demonstrates an independent contribution rather than an artefact of association with range innovation. The practical significance is amplified by the descriptive result: this dimension is simultaneously the least adopted at a mean of 2.51 and the strongest predictor, which identifies the largest reservoir of unexploited opportunity available to the firm, since marginal returns are greatest where current implementation is lowest. The finding also resolves the apparent contradiction in the literature between Sendawula et al. (2023) and Ebrahimi et al. (2018): innovation does foster performance, but the dimension that does so is the one whose adoption is hardest and whose returns are least visible, which is precisely the dimension a firm surveyed on innovation in the aggregate might report as absent.

Marketing and customer interface innovation was the second strongest predictor with a beta of 0.286, significant at $p < 0.001$. Its substantial independent contribution confirms that reach extension operates through a channel distinct from operational capability. The mechanism is that identified in the literature review and it acquires force from Kakooza et al. (2023) on location: a firm whose premises constrain its catchment can relax that constraint through channels that do not require the customer to visit, and in a peripheral corridor location this is not a marginal enhancement but a partial escape from the geography.

Product and stock range innovation recorded a beta of 0.183, significant at $p = 0.005$. Its position, below process and marketing innovation despite recording a higher adoption mean than either, is theoretically instructive. It indicates that range extension contributes to growth but that its independent contribution is modest once the systems governing what to stock are controlled, which supports the proposition that range without intelligence extends into the unknown. The finding implies that the firm's stock range is not its binding constraint, and that extending it further absent the inventory capability to direct the extension would consume capital without proportionate return.

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Payment and financial technology adoption recorded the smallest beta at 0.154, significant only at p = 0.024, ranking last despite being by a wide margin the most adopted dimension at a mean of 3.82. This inversion between adoption and effect is the study's most pointed finding and it carries a clear strategic implication. The firm has adopted most fully the innovation that contributes least to its growth, and has adopted least the innovation that contributes most. This is not a failure of judgement but a rational response to the adoption calculus that diffusion theory describes: mobile money was easy, visible, and immediately advantageous, while an inventory system is hard, invisible, and advantageous only later. The consequence is that the firm's innovation effort has flowed toward the path of least resistance rather than toward the point of greatest return, which is a pattern the theory predicts and which the data here document. The regression equation may be expressed as BG = 0.428 + 0.194(PSRI) + 0.326(PISI) + 0.271(MCII) + 0.181(PFTA).

5.0 Conclusion and Recommendations

The study concludes that technological innovation exerts a substantial and statistically significant influence on business growth at Tito General Hardware, jointly explaining 56.6 per cent of variance, supporting Sendawula et al. (2023) that innovative small businesses outperform non-innovative counterparts. The effect is however heterogeneous and, critically, inversely related to adoption: process and inventory system innovation is the least adopted dimension and the strongest predictor, while payment technology is the most adopted and the weakest. This inversion is explained by diffusion logic, in which adoption tracks ease rather than return, and it identifies the firm's innovation effort as misallocated relative to its opportunity.

It is recommended that Tito General Hardware treat inventory system investment as its priority, since this dimension combines the weakest current implementation with the strongest growth effect and therefore offers the largest marginal return. Implementation should be complete rather than partial, since a partially maintained stock record invites trust it does not merit and is worse than none; this implies a defined transition with stock-take reconciliation, staff training, and a period of parallel running rather than a gradual drift into the system. Reorder points should be established from turnover data once the system supplies them, converting procurement from reactive replenishment into anticipation, since the stock-out that costs a builder's project custom is a loss that never appears in the sales record. Slow-moving stock should be identified and liquidated once turnover intelligence permits its identification, releasing capital immobilised in lines whose retention reflects the absence of data rather than a judgement about demand. Marketing and customer interface innovation should be extended as the second priority, given its substantial independent effect and given that Kakooza et al. (2023) establish location as consequential for Ugandan SME success, which makes digital reach a partial escape from a peripheral corridor position. Payment technology, already fully adopted, should not receive further adoption effort but should be integrated analytically, since the mobile money transactions the firm already processes contain the demand intelligence it currently discards, and the integration rather than the adoption is where the return resides. Finally, range extension should follow

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inventory capability rather than precede it, since extending range without the data to direct it converts an innovation into an immobilisation of capital.

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