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EFFECTS OF PRODUCT AND PROCESS INNOVATION ON THE PERFORMANCE OF SMEs IN LAGOS STATE, NIGERIA

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ABSTRACT

The Small and Medium Enterprises (SMEs) sector is a key driver of economic development, poverty reduction, and employment generation. Yet only 1 in every 10 SMEs survives beyond its first year, underscoring the significant challenges these enterprises face. While innovation is widely recognised as critical to SMEs performance, existing studies have largely examined product and process innovation in isolation, with limited attention paid to their interaction effect, particularly within the context of Nigerian SMEs. This study addresses that gap by examining how product innovation, process innovation, and their interaction influence SMEs performance in Lagos State, Nigeria. A survey research design was employed to collect data from management employees of SMEs across six industries food, water, furniture, clothing, bags, and shoes spanning the 20 local government areas of Lagos State. Data from 276 respondents were analysed using reliability analysis, factor analysis, bivariate correlation, and multiple regression analysis. Results from the three hypotheses tested showed that product innovation, process innovation, and their interaction each had a significant positive effect on SMEs performance. The study contributes theoretically by clarifying the interrelationship between product and process innovation in shaping firm performance, extending current understanding of the innovation-performance nexus in SMEs. Practically, the findings suggest that SMEs managers should prioritise integrating both product and process innovation to drive sustainable, long-term business success.

Keywords: Performance, Process Innovation, Product Innovation, SMEs

INTRODUCTION

Small and Medium-sized Enterprises are a heterogeneous group of resource-limited businesses encompassing survival-oriented microenterprises and innovatively-minded, fast-growing businesses that significantly contribute to job creation, income growth, and skill development of the workforce (Prasannath, Adhikari, Gronum, and Miles, 2024). In the case of emerging economies, SMEs are vital launching pads to economic progress, alleviating poverty rates, and creating job opportunities (Mushi, 2024; Tarutė & Gatautis, 2014). According to an increasing body of literature, a more entrepreneurial mindset, a shift beyond traditional scarcity-based thinking, and the ability to open new paths to growth and success can help SMEs perform better (Morris, Santos, & Neumeyer, 2020; Prasannath et al., 2024). Diverting the focus to Nigeria, the statistic shows that only 10% of SMEs survive more than the first year of operation which highlights the overwhelming barriers and susceptibility of these companies (Onyeje, Court, & Agbaeze, 2022). Some of the most influential contributors to the low performance of the Nigerian SMEs include limited financial ability, inadequate business skills, ineffective marketing, and supply of low quality goods or services (NBS/SMEDAN, 2021). In addition, the environment in which SMEs are doing business has become very competitive, unstable, and uncertain in industries, customer behaviour, and economic, social, and technological aspects, making the conventional strategies irrelevant (Gutiérrez-Broncano, Linuesa-Langreo, Rubio-Andrés, & Sastre-Castillo, 2024). To manage the said challenges and achieve their goals, capital, human resources, and marketing are some of the factors that influence the performance of SMEs, with innovation being largely known as one of the key success drivers (Le, Le, Pham, & Vo, 2023).

The past decade has seen the business environment being shaken by innovations forcing businesses to be quick and react swiftly to the changing market needs (Ali, Muhammad, & Migliori, 2024). Barney (1991) is of the opinion that successful firms are those that are highly innovative and able to make use of unique competences and capabilities that bring success in the short run leading to a sustainable competitive advantage that brings success in the long-run. According to Scellato and Ughetto (2010), innovation activities play a significant role in helping SMEs to come up with unique products, services or business models that distinguish them amongst their competitors. In other words, SMEs are proactive and innovative, continually introducing new products, services, and organisational strategies to improve their performance (Alkhalaf & Al-Tabbaa, 2024). Innovation can be found in a variety of sources, such as new products, business processes, marketing strategies, organizational structures, external relationships, or any activity that leads to major changes (Gutiérrez-Broncano, 2024). Much academic interest has been focused on the analysis of the role of innovation in the performance of SMEs in developing countries (Alkhalaf & Al-Tabbaa, 2024), but the findings are inconclusive (Mushi, 2024). There are studies which have been useful (Wang, 2023), and there are studies which have provided negative findings (Ali et al., 2024). One more weakness exists in the literature as most scholars have only covered product-based innovation, thereby providing the incomplete picture of the overall effects of innovation on the performance of a business (Gutiérrez-Broncano et al., 2024). This points to the necessity to do more research that involves different types of innovations.

Innovation in an organizational context is generally divided into the two major categories, i.e., product innovation and process innovation (Bayraktar, Hancerliogullari, Cetinguc, & Calisir, 2017). Despite the fact that a lot of research has been carried out to investigate innovation in small and medium-size businesses (SMEs), there is still little knowledge on the impacts on product and

process types of innovation on the performance of SMEs in Lagos State, Nigeria (Expósito, Sanchis-Llopis, & Sanchis-Llopis, 2024). Besides this, comparatively less research has been put on organizational innovation that entails non-technical changes to business operation and administrative systems. In terms of performance analysis, this research paper is concerned with operational performance that relates to the processes and activities within an organization that lead to the overall efficiency of the organization. This dimension of performance focuses on non-financial aspects like employee satisfaction and customer satisfaction (Santos & Brito, 2012). With the scarcity of empirical studies on the operational performance of the SMEs in Nigeria, this study fills that gap by investigating the relationship between product and process innovation and the performance outcomes.

This knowledge deficit is especially evident considering the distinctive obstacles SMEs encounter in surmounting monetary and resource constraints that restrict their capacity to achieve their goals. This research makes a unique contribution to the scholarly discourse on organisational innovation and SME performance. The investigation underscores the importance of organisational innovation for SME success, particularly examining how product and process innovations influence performance based on existing scholarship and contextual considerations (Gutiérrez-Broncano et al., 2024). Resource scarcity and funding limitations frequently restrict SMEs' ability to capitalize on market prospects, creating difficulties in responding to evolving market demands. Innovation offers a potential solution for SMEs to overcome these obstacles (Alkhalaf & Al-Tabbaa, 2024). While SMEs in emerging markets have demonstrated considerable innovation, they continue to lag behind their counterparts in developed nations in innovation capabilities and overall business outcomes (Zhang, 2022). Consequently, there has been substantial growth in research examining the effects of innovation on SMEs' performance in emerging market settings (Liu & Wang, 2022). This investigation enriches the academic conversation on SME performance and organisational innovation by situating the study in Nigeria, an emerging economy and the largest economic power in Sub-Saharan West Africa. This positioning allows for empirical analysis of product innovation, which has dominated researchers' attention in SMEs performance studies (Aliasghar, Sadeghi, & Rose, 2023), and process innovation, which remains insufficiently explored in SMEs performance research (Ramos-González, Rubio-Andrés, & Sastre-Castillo, 2022), within the Nigerian SMEs landscape. By focusing on Nigeria's economy, this study broadens existing understanding through its empirical contributions.

The paper is organised into five sections. After this introductory section, Section 2 examines relevant literature and develops research hypotheses. Section 3 outlines the methodological approach and data sources employed. Section 4 presents empirical results and analysis, while Section 5 provides concluding remarks and discusses policy ramifications.

LITERATURE REVIEW AND HYPOTHESES

Theoretical Framework

This study draws on three complementary theoretical perspectives to explain the relationship between innovation and SMEs' performance: stakeholder theory, the Resource-Based View (RBV), and Schumpeterian innovation theory. While each offers a distinct lens, together they provide a more robust foundation than any single theory alone, addressing both the *why* firms

innovate (Schumpeter), the *resources* that enable innovation (RBV), and the *outcomes* against which performance should be judged (stakeholder theory).

Stakeholder Theory

Businesses affect and are affected by the external environment in which they operate, giving rise to stakeholder theory as a framework for understanding firm behaviour (Awa, Etim, and Ogbonda, 2024). Freeman (1984) pioneered the concept, defining stakeholders as any person or organisation with a significant interest in an organisation's performance, whether through their capacity to influence its goal attainment or through being affected by it. The theory holds that firms should look beyond shareholder value maximisation to also account for the interests of customers, communities, employees, suppliers, and the environment. Freeman's later typology further distinguishes external stakeholders, such as communities and government, from internal stakeholders, such as employees, suppliers, and customers.

Although stakeholder theory is well established in strategic management, its application to innovation research has been comparatively limited; most innovation studies still default to financial performance as the primary outcome variable, leaving stakeholder-based conceptions of performance (e.g., employee and customer satisfaction) under-explored as innovation outcomes. This is the gap that stakeholder theory addresses in the present study, as it provides a platform to connect innovation and performance through stakeholder satisfaction rather than financial metrics alone.

Resource-Based View

A second relevant perspective is the Resource-Based View, which holds that a firm's sustained competitive advantage derives from the possession and deployment of valuable, rare, inimitable, and non-substitutable (VRIN) resources (Barney, 1991). Within this framework, innovation capability itself can be understood as a strategic resource: SMEs that develop superior product or process innovation capabilities are, in effect, building a resource that competitors cannot easily replicate, particularly where that capability is embedded in firm-specific routines, tacit knowledge, or organisational culture.

RBV is particularly useful for explaining *why* innovation translates into performance differences between firms operating in the same industry and facing the same market conditions a question that stakeholder theory, which is primarily concerned with *whose* interest's performance should serve, does not directly address. However, RBV has been criticised for being largely static and for paying insufficient attention to *how* firms build and renew resources over time in changing environments (Eisenhardt & Martin, 2000), which is where dynamic capabilities theory becomes relevant.

Schumpeterian Innovation Theory

Schumpeter's (1934, 1942) foundational work conceptualises innovation as the driving force of economic development, occurring through "creative destruction" the process by which new products, processes, and forms of organisation displace existing ones and, in doing so, generate

new value while rendering old competencies obsolete. Schumpeter distinguished between invention (the generation of new ideas) and innovation (their commercial application), a distinction that remains central to the product–process innovation typology used in this study.

Schumpeterian theory provides the macro-level economic rationale for why product and process innovation matter to SMEs' performance: innovating firms gain temporary monopoly-like advantages (e.g., higher margins, market share) until competitors imitate or surpass them, creating a continuous pressure to innovate. This perspective complements stakeholder theory and RBV by explaining the competitive mechanism through which innovation generates performance gains, rather than only the resource conditions (RBV) or the stakeholder outcomes (stakeholder theory) through which those gains are measured.

These three perspectives are not fully aligned with Schumpeter's emphasis on industry-level disruption, which sits somewhat uneasily with the firm-level, resource-internal focus of RBV, and neither inherently prioritises stakeholder welfare over competitive advantage. This study reconciles them by treating Schumpeterian and RBV logics as explaining the *mechanisms by which product and process innovation generate performance gains, and stakeholder theory as defining the performance measure* against which those gains are assessed.

Performance

Organisational performance refers to a firm's ability to effectively utilise its resources to achieve strategic objectives, yet despite its centrality to strategic management research, scholars remain divided on how it should be conceptualised, delimited, and measured. Santos and Brito (2012) distinguish two dimensions: a financial dimension capturing profitability, growth, and market value, and a strategic/operational dimension capturing customer and employee satisfaction, environmental impact, and social contribution. This distinction matters because, as Combs, Crook, and Shook (2005) caution, operational performance is often mistakenly treated as a performance outcome rather than as an antecedent of financial performance — a conflation that has muddied comparisons across the innovation-performance literature, since studies measuring "performance" are not always measuring the same construct.

Defining performance as the level of stakeholder satisfaction (Neely, Adams, and Kennerley, 2002) helps separate performance antecedents from outcomes (Hitt, 1988), and this study adopts that approach. Following Venkatraman and Ramanujam (1986), a subjective performance scale is used, capturing the dimensions of operational performance from a stakeholder perspective, since stakeholder-based performance measurement requires identifying stakeholders and defining performance outcomes that capture their satisfaction.

This subjective approach is also a pragmatic necessity rather than a purely theoretical preference: financial records for the SMEs in this study's sample are not publicly available, making objective financial measurement infeasible at this scale. While shareholders, customers, and employees are typically all considered in such analyses given their regular contact with the firm (Clarkson, 1995), approximately 79.1% of Nigerian SMEs are sole proprietorships, which justifies the exclusion of shareholders as a distinct stakeholder group in this context. Employees and customers, by contrast, are a common denominator across SMEs both in Nigeria and globally, and the literature suggests stakeholder satisfaction in SMEs should be measured simply, given that SMEs typically cannot

manage the breadth of stakeholder expectations that large multinational firms face (Garengo et al., 2005). Accordingly, employee and customer satisfaction are used as the performance measures in this study.

Product and Process Innovation

Innovation has been defined in numerous, sometimes conflicting, ways across the literature (Harel, Schwartz, and Kaufmann, 2021). Some definitions emphasise innovation as an *outcome*: Zwingina and Opusunju (2017) define it as the adoption of new ideas or methods that improve performance indicators such as revenue, profit margins, and market penetration, while Baregheh, Rowley, and Sambrook (2009) similarly frame it as the existence of new ideas geared towards lifting organisational performance. Others emphasise innovation as a *process of implementation* rather than an outcome in itself: Wong, Tjosvold, and Liu (2009), drawing on West and Anderson (1996), define innovation as the implementation of new processes and products to promote the interests of the organisation and its stakeholders. This study adopts the West and Anderson (1996) conceptualisation precisely because it aligns with both the study's core variables (product innovation, process innovation, performance) and its theoretical basis (stakeholder theory); the outcome-based definitions, while not incompatible, conflate innovation with its effects in a way that would make it difficult to test innovation as a predictor of performance rather than as performance itself.

Product innovation. Product innovation is a key determinant of performance in small and micro manufacturing firms, and involves launching new or improved products that meet previously identified consumer needs and provide high quality. Given resource constraints, SMEs typically find it more cost-effective to modify existing products than to develop entirely new ones, as this offers a faster route to returns, and such quality-driven product innovations can improve organisational performance and build sustainable competitive advantage. Notably, product innovation tends to matter most in the early stages of a product's lifecycle; once a dominant design emerges and market understanding deepens, process innovation typically becomes the primary driver of performance, a temporal distinction that is often glossed over in cross-sectional SMEs studies, including much of the literature reviewed here, which tends to treat product and process innovation as if their relative importance were constant over time.

Process innovation. Process innovation concerns optimising operational processes to achieve greater efficiency and effectiveness. Although such improvements may be less visible to consumers than product innovations, they strengthen performance by reducing operational costs and improving offering quality, and sustained improvements of this kind support competitiveness and market performance. Process innovation is especially valuable to resource-constrained SMEs, in part because it tends to be incremental and becomes institutionalised within organisational structures and practices, often through long-term collaborative relationships, and it has been shown to significantly affect organisational performance.

Synthesis and tension in the literature. Across these strands, innovation is broadly characterised as central to firm success improving productivity and efficiency, guiding resource allocation, and enabling adaptation to market dynamics, while also helping owners carve out market niches and sustain performance under uncertain conditions. The broader empirical record is fairly consistent in direction: recent studies converge on a positive relationship between innovation of both product-

and process-oriented. Ayinaddis (2023) similarly finds a recurring positive correlation between innovation and firm performance measures across the literature.

However, this apparent consensus masks two unresolved tensions that this study's design speaks to directly. First, most cited studies examine product and process innovation as independent, additive predictors rather than testing whether they interact, leaving open the question of whether the two reinforce or substitute for one another, which is precisely the gap this study's third hypothesis addresses. Second, no empirical study could be identified that uses customer and employee satisfaction specifically as performance measures in SMEs innovation research, meaning the broadly positive findings summarised above rest almost entirely on financial or self-reported growth metrics; whether the same positive relationship holds under a stakeholder-satisfaction lens, as adopted here, remains an open empirical question rather than a settled one. According to this, the following hypotheses are presented:

H_1: Product innovation is a major determinant of performance of SMEs in Lagos State, Nigeria.

H_2: Process innovation plays a major role in performance among SMEs in Lagos State, Nigeria.

H_3: Product and process innovation combined has an important effect on performance of SMEs in Lagos State, Nigeria.

2.4 Conceptual Framework

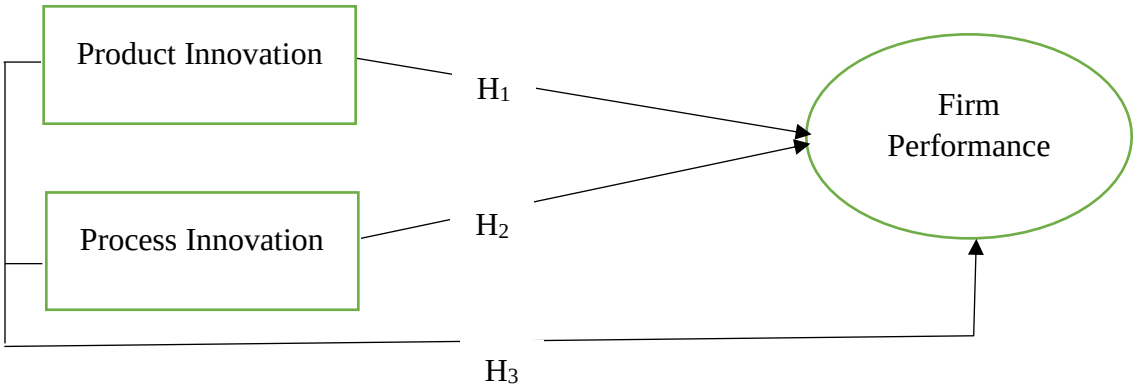

Figure 1. Conceptual Framework of the Study

Source: *Researcher, 2025.*

The conceptual framework as shown in Figure 1 reveals the variables in the study and how they relate to each other where the independent variables are product and process innovation and the dependent variable is performance including employee and customer satisfaction.

METHODOLOGY

Research Design and Sampling

This study adopted a quantitative research design, specifically a cross-sectional survey approach, to investigate the relationship between innovation practices and business performance among small and medium-sized enterprises (SMEs) in Lagos State, Nigeria. A quantitative paradigm was chosen for several reasons. First, surveys enabled the collection of data from a large number of SMEs, thereby enhancing the external validity and generalisability of the findings. Second, quantitative methods offered a systematic and replicable means of measuring the relationships among variables, facilitating statistical testing and enabling assessment of the magnitude and significance of those relationships (Creswell, 2014).

Lagos State, Nigeria, was selected as the study site due to its economic significance as the foremost commercial hub in Nigeria and one of the largest business centres in West Africa. The state is characterised by an exceptional concentration of SMEs across diverse manufacturing sectors, making it a strategic and representative setting for investigating innovation and business performance dynamics. Importantly, the existing literature has largely overlooked the specific impact of product and process innovation on business performance in this context, particularly with respect to employee and customer satisfaction as key performance indicators. This gap in the literature provided a strong justification for focusing on Lagos State manufacturing SMEs.

The study focused exclusively on manufacturing SMEs for two key reasons. First, manufacturing firms are primary drivers of product and process innovation, making them the most theoretically appropriate context for examining both types of innovation as conceptualised in this study. Second, manufacturing SMEs in Lagos State represent a significant and underexplored sub-population within the broader SME landscape, enabling a more focused and internally coherent investigation than a cross-sector approach would allow (Saunders, Lewis, & Thornhill, 2019).

According to 2021 NBS/SMEDAN data, there are 42,062 small and medium-sized businesses in Lagos State, comprising 37,135 small and 4,932 medium-sized businesses. As the total number of manufacturing SMEs active in Lagos State was not published and the NBS/SMEDAN has not updated this data since 2021, the population was treated as unknown. Consequently, the Cochran (1977) formula for unknown populations was used to determine a minimum sample size, yielding a target of 384 manufacturing SMEs.

The sampling strategy involved a combination of three complementary techniques, each serving a distinct purpose. First, quota sampling was applied to ensure proportional representation across six manufacturing categories- food, water, furniture, clothing, bags, and shoes as well as across the 20 local government districts (LGDs) of Lagos State. Sixty-four questionnaires were distributed per category, allocated as three questionnaires per LGD in 16 districts and four in the remaining four districts. This ensured that no single category or district was disproportionately represented, thereby improving the representativeness of the sample (Etikan & Bala, 2017).

Second, purposive sampling was employed to identify respondents who possessed the relevant knowledge and authority to speak to innovation and performance in their organisations. Specifically, the sample was drawn from senior management staff, including owner-managers and heads of marketing and human resource departments, who were considered best positioned to

provide accurate and informed assessments of organisational performance objectives (Creswell, 2014). Third, convenience sampling facilitated the physical delivery and collection of questionnaires within the identified locations.

It is acknowledged that the combined use of these three sampling methods introduces certain limitations. Quota sampling cannot guarantee a true probabilistic representation, and purposive and convenience sampling may introduce selection bias, as the sample is not randomly drawn from the entire population of manufacturing SMEs in Lagos State (Bryman, 2016). Consequently, findings should be interpreted with caution and may not be fully generalisable beyond the specific context of Lagos State manufacturing SMEs. Despite these limitations, the triangulation of sampling methods was considered the most pragmatic approach given the absence of a comprehensive sampling frame for manufacturing SMEs in Lagos State.

Data Collection Instrument

Data were collected through a structured, self-administered questionnaire comprising two parts. Part one gathered demographic information on respondents, including age, gender, educational level, marital status, and length of service. Part two addressed the study's substantive constructs and was organised into four thematic areas: product innovation, process innovation, employee satisfaction, and customer satisfaction.

Measurement of Independent Variables

Innovation was operationalised along two dimensions: product innovation and process innovation, consistent with the extant literature (OECD, 2018). Scales were adapted from Ayinaddis (2023) to ensure contextual relevance and psychometric suitability. Product innovation was measured using a seven-item scale capturing the introduction of new products, the degree of technological advancement embedded in products, and the extent of product differentiation within the industry. Each item was rated on a five-point Likert scale anchored at 1 = Strongly Disagree and 5 = Strongly Agree. Process innovation was measured using a four-item scale that assessed commitment to research and development, adoption of new production technologies, and the innovative use of raw materials in manufacturing processes, also rated on the same five-point Likert scale. These items were adapted rather than adopted verbatim to improve face validity within the Nigerian manufacturing context.

Measurement of Dependent Variables

Consistent with the position of Love, Priem and Lumpkin (2002), subjective self-assessment measures were employed to capture organisational performance in the absence of verifiable objective data. Two performance indicators were used: employee satisfaction and customer satisfaction. Employee satisfaction was measured using a five-item scale based on Yee, Yeung, and Cheng (2008), assessing salary adequacy, promotion prospects, the nature of the job, quality of relationships with co-workers, and supervisory relations. Customer satisfaction was measured using a four-item scale adapted from Evanschitzky, Groening, Mittal, and Wunderlich (2011), capturing customer perceptions of product quality, employee friendliness, store layout, pricing,

and professional service. All items were rated on a five-point Likert scale and were adapted to align with the manufacturing SMEs context in Lagos State. Respondents were asked to rate performance with reference to the previous financial year.

Data Collection Procedure

Questionnaires were distributed and collected using a drop-off and pick-up method across the identified LGDs. Prior to completing the questionnaire, participants were required to provide informed consent, which was clearly solicited at the outset of the survey instrument. Respondents were assured of the confidentiality of their responses and their right to withdraw at any point without consequence. 384 questionnaires were distributed, from which 276 valid responses were returned, yielding a response rate of approximately 71.9 percent. Incomplete or incorrectly completed questionnaires were excluded from the analysis. The achieved sample of 276 respondents meets the sample-to-variable ratio requirement of at least 20:1 recommended by Hair, Black, Babin, Anderson, and Tatham (2006) for factor analysis, exceeding that threshold with a ratio of 69:1 across four constructs.

3.4 Ethical Considerations

This study was conducted in accordance with established ethical principles governing social science research. Ethical approval was sought and obtained from the relevant institutional review board prior to data collection. Participation was entirely voluntary, and all respondents provided explicit informed consent before completing the questionnaire. Participants were informed of the purpose of the study, their right to withdraw at any stage without penalty, and the anonymity and confidentiality of their responses. No personally identifiable information was collected, and all data were stored securely and used solely for the purposes of this research. The study did not involve any deception, vulnerable populations, or procedures that posed a risk of harm to participants.

3.5 Reliability and Validity

Content validity was established through expert evaluation, in which the questionnaire was reviewed by a panel of management professionals with expertise in innovation and SME research. The panel assessed whether the items adequately represented the theoretical constructs under investigation and provided feedback that was used to refine item wording and relevance.

Construct reliability was assessed using Cronbach's alpha coefficients. All four constructs, product innovation, process innovation, employee satisfaction, and customer satisfaction, returned alpha values exceeding 0.70, the widely accepted threshold for adequate internal consistency (Cronbach, 1951; Nunnally, 1978). This confirms that the items within each construct measure a coherent underlying dimension.

Construct validity was assessed through exploratory factor analysis (EFA) using Promax oblique rotation, consistent with the expectation that the four constructs may be inter-correlated (Hair et al., 2006). An eigenvalue criterion of 1.0 was used to retain factors. The EFA yielded a clear four-factor solution corresponding to product innovation (Factor 1), customer satisfaction (Factor 2),

employee satisfaction (Factor 3), and process innovation (Factor 4), demonstrating satisfactory construct validity. Items loaded distinctly onto their theoretically designated factors, and no cross-loadings of concern were observed, indicating a well-defined factor structure.

The four factors together explained 36.75 percent of the total variance in the data. While this figure falls below the commonly cited 50 percent threshold for variance explained (Allen & Bennett, 2010), this is not uncommon in social science research with multi-item scales capturing complex human constructs. In the context of common method bias assessment using Harman's single-factor test, a single factor accounting for 36.75 percent of variance which is below the 50 percent threshold suggests that common method variance is unlikely to be a serious confound in this study. However, it is acknowledged that Harman's single-factor test is a limited diagnostic for common method bias and may not detect all forms of systematic response bias (Podsakoff et al., 2003). Future research should consider additional procedural and statistical remedies, such as marker variable techniques or confirmatory factor analysis with a common method factor.

DATA ANALYSIS AND REGRESSION ASSUMPTIONS

Descriptive statistics were computed to summarise the sample's demographic characteristics and the distribution of scores across all study variables. Multiple regression analysis was then performed to examine the relationships between innovation (product and process) and business performance (employee and customer satisfaction). Before interpreting the regression results, the key assumptions of ordinary least squares regression were tested. First, normality of residuals was assessed using the Shapiro-Wilk test and visual inspection of Q-Q plots. Second, homoscedasticity was evaluated through residual scatter plots and the Breusch-Pagan test to confirm that the variance of the error terms was constant across all levels of the predictor variables. Third, multicollinearity among predictors was examined using Variance Inflation Factor (VIF) values, with a threshold of VIF < 10 (and ideally < 5) used to confirm the absence of problematic collinearity (Hair et al., 2006). Fourth, independence of residuals was tested using the Durbin-Watson statistic, with values close to 2 indicating no serial autocorrelation. Fifth, linearity was verified by inspecting partial regression plots. All assumptions were satisfied prior to model interpretation, ensuring the reliability and validity of the regression estimates. All statistical analyses were conducted using SPSS version 27. A significance level of $p < 0.05$ was applied throughout the study.

4. Data analysis and Results

4.1 Sample Description

The study utilised descriptive statistics in SPSS Version 23 to analyse the socio-demographic data. Table 4.1outlines the findings related to socio-demographic characteristics.

Table 4.1: *Socio-demographic profile of respondents*

Profile	Frequency	Percentage (%)
Sex		
Male	179	64.9
Female	97	35.1
Total	276	100
Marital Status		
Married	166	60.1
Single	110	39.9
Total	276	100
Age Range		
30 years old or less	45	16.3
31 – 40 years	89	32.2
41 years or above	142	51.5
Total	276	100
Educational Qualification		
Less than Bachelor Degree	88	31.9
Bachelor Degree	125	45.3
Postgraduate Degree	63	22.8
Total	276	100
Rank		
Owner-manager	58	21.0
Head of Marketing Department	121	43.8
Head of Human Resource Department	97	35.2
Total	276	100

Source: *Researcher 2025*

As shown in Table 4.1, the sample was predominantly male (64.9%), while females accounted for 35.1% of respondents. The majority of respondents were married (60.1%), and over half (51.5%) were aged 41 years or above, reflecting a relatively experienced managerial cohort. In terms of educational attainment, 45.3% held a bachelor's degree, 22.8% held a postgraduate degree, and 31.9% had qualifications below degree level, suggesting adequate educational capacity among respondents to assess organisational innovation and performance. By managerial role, 43.8% were heads of marketing departments, 35.2% were heads of human resource departments, and 21.0% were owner-managers, confirming that respondents occupied senior positions appropriate for providing informed assessments of their firms' innovation and performance.

4.2.1 Correlation Analysis

Table 4.2: A bivariate correlation analysis of variables

Variables	1	2	3
Firm Performance (1)	1		
Product Innovation (2)	.160**	1	
Process Innovation (3)	.267**	.080	1
MEAN	4.1250	3.9156	3.6332
SD	.90042	.83534	1.11505

***** Correlation is significant at the 0.01 level (2-tailed).***

Source: *Researcher 2025*

The correlation results indicate a statistically significant positive relationship between product innovation and firm performance ($r = .160$, $p < .01$), providing initial support for Hypothesis 1. Similarly, a statistically significant positive relationship was observed between process innovation and firm performance ($r = .267$, $p < .01$), offering preliminary support for Hypothesis 2. The correlation between the two predictor variables was low and non-significant ($r = .080$, $p > .05$), indicating the absence of problematic multicollinearity between product and process innovation.

Descriptively, firm performance returned the highest mean score ($M = 4.13$, $SD = 0.90$), followed by product innovation ($M = 3.92$, $SD = 0.84$) and process innovation ($M = 3.63$, $SD = 1.12$). The relatively modest standard deviations suggest that responses were reasonably consistent across participants. Normality was assessed through skewness and kurtosis statistics; all values fell within the −2 to +2 range recommended by Kline (2011), confirming that the distributional assumption for parametric testing was satisfactorily met.

4.2.2 Regression Analysis

Table 4.3: Results of Regression analysis

$R^2 = 0.301$

$F = 13.573$

$Sig = 0.000^b$

Relationships	B	Beta	T	p-value	Conclusion
Constant	2.786		9.578	.000	
Firm Performance <--- Product Innovation	.151	.140	2.411	.017	Supported
Firm Performance <--- Process Innovation	.206	.255	4.410	.000	Supported

Source: *Researcher, 2025.*

Prior to hypothesis testing, the variables were screened for multicollinearity. Variance inflation factor (VIF) values were 1.006 for both product innovation and process innovation, well within the accepted threshold of 10 (Hair et al., 2006), confirming the absence of multicollinearity. These values are within the suggested limits of 0.1 and 10, and these figures do not exceed the standards

suggested by Hair et al. (2006), who proved that multicollinearity was not a critical issue. With this checked, hypothesis testing was undertaken. The first hypothesis proposed that product innovation has a significant influence on SME performance in Lagos State, Nigeria. The results are shown in Table 4.3. It was found that product innovation has a statistically significant and positive impact on the performance of Lagos State SME as indicated by the regression coefficient ($\beta = 0.140$, $t = 2.411$, $p < 0.05$). The second hypothesis proposed that process innovation has a significant impact on SME performance in Lagos State, Nigeria. The results presented in Table 4.3 show that process innovation ($\beta = 0.255$, $t = 4.410$, $p < 0.05$) had a positive and statistically significant influence on the performance of SMEs in Lagos State, Nigeria. The third hypothesis proposed that the combined explanatory power of product and process innovation would significantly predict SME performance in Lagos State, Nigeria. Table 4.3 indicates that the coefficient of determination (R^2) is 0.301 and implies that 30 percent of the variance of SME performance in Lagos State, Nigeria is explained by the independent variables. This on the other hand indicates that 70 percent of the variance in performance is due to factors not captured in this model of study. The results of ANOVA test ($F = 13.573$, $p < 0.000$) confirmed that the association between predictor and outcome variables was highly significant, which proved that the predictive model was reliable. Further analysis determined the individual roles of each predictor. The only significant impact was on process innovation but product innovation also had a significant impact, although not a unique one. Since both predictors jointly and significantly explained variance in SME performance ($R^2 = 0.301$, $F = 13.573$, $p < 0.001$), the third hypothesis, interpreted as joint predictive significance rather than a statistical interaction effect, was supported.

DISCUSSION OF FINDINGS

This study examined the impact of product and process innovation on SME performance in Lagos State, Nigeria. Two independent variables product innovation and process innovation were treated as unidimensional constructs consistent with the academic literature, while firm performance (the dependent variable), measured through employee and customer satisfaction, was similarly conceptualised as unidimensional. Data from 276 management-level respondents were analysed using reliability testing, exploratory factor analysis, bivariate correlation analysis, and multiple regression analysis. All three hypotheses were supported: product innovation, process innovation, and their joint predictive contribution each had a significant positive effect on SMEs performance in Lagos State, Nigeria.

The empirical analysis confirms that there is statistically significant relationship between product innovation and SMEs performance in Lagos State, Nigeria, thereby supporting the first hypothesis. This finding is consistent with prior literature, such as Ayinaddis (2023) and Beltramino et al. (2022), which found that product innovation has a significant influence on organizational outcomes. As an example, through providing quality services, organizations can be differentiated and gain competitive advantages thus positively influencing performance and achieving long-term success (Ayinaddis, 2023).

However, the findings of this study diverge from those of Harel et al. (2021), who found that there was no significant relationship between product innovation and business growth because managerial imperatives overrode market forces in influencing innovation in small businesses in Hadera, Israel. These business managers focus on survival, as opposed to growth. Similarly, the results of Zhang (2022) hint that Chinese SMEs do not benefit in terms of performance by adopting

a variety of product-oriented innovation strategies at the same time without organizational changes. Such contradicting findings endorse the suggestion of this study that there are other explanatory variables that drive organization performance other than product innovation.

The study also confirmed the second hypothesis, demonstrating that process innovation has a significant positive impact on SMEs performance in Lagos State, Nigeria, and highlighting the importance of process innovation in driving business success. This observation aligns with the existing studies (Aliasghar et al., 2023; Ayinaddis, 2023; Beltramino et al., 2022). To illustrate, Ayinaddis (2023) contends that process innovation can help organizations to facilitate their operations and eliminate inefficiencies, as well as increase their productivity, which positively affects the overall organizational performance. In their turn, Aliasghar et al. (2023) had noticed that process innovation development requires the creation and preservation of a significant relationship with the external partners, which demands a significant amount of managerial attention and resources, which can be a burden on SMEs limited in resources.

Finally, testing the third hypothesis provided empirical evidence that both product and process innovation jointly and significantly predict SMEs performance in Lagos State, Nigeria, confirming that innovation meaningfully influences firm performance. Ayinaddis (2023) and Le et al. (2023) support this finding. As an example, the study conducted by Le et al. (2023) revealed that the positive effect of innovation on the performance of the SMEs is mostly due to improvements in existing products and not other elements. Moreover, the innovative SMEs usually are superior to competitors in the market due to their ability to respond more to changing customer preferences and needs (Radicic & Djalilov, 2019). Past research has also established that organizational innovation plays a vital role in enhancing organizational learning and capability building, which might translate into enhanced competencies and improved SMEs performance, highlighting the importance of innovation in enhancing business success (Ayinaddis, 2023).

CONCLUSION AND RESEARCH CONTRIBUTIONS

Theoretically, this study adds to the literature on the connection between innovation and performance among small and medium-sized enterprises (SMEs). It provides useful insights into the impacts of product and process innovation on overall business outcomes, thereby enhancing the knowledge base on innovation as a driver of organizational success. Although SMEs have contributed significantly to the growth and performance of the economy in most sectors like food, beverages, furniture, fashion and footwear, there is little research on the relationship between innovation practices and the performance of firms, especially in the 20 local government areas of Lagos State. This gap highlights the significance of the current study. The results can be used in policymaking and SMEs operations since they offer evidence-based information that can be used to make policy and strategic decisions. In practical terms, SMEs managers may use these insights to build competitiveness and long-term sustainability around product and process innovation as core strategies to achieve these elements.

Limitations and Future Research

To begin with, it is clear that the cross-sectional design of this study does not allow tracking the changes and relationships over time. Further studies in future should be longitudinal in nature in

order to gain a better insight into this changing phenomenon. Secondly, this research has a narrow geographical orientation despite considering SMEs in the major industries in the Lagos State, meaning that more research should be conducted to determine the applicability of the results to other sectors and regions, such as the neighbouring states. Thirdly, to better understand the complex relationship between innovation and performance in manufacturing SMEs, future research could examine potential mediating and moderating factors that shape the impact of product and process innovation on overall firm performance.

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