

Impact of Innovations on the Performance of Small and Medium Entrepreneurs in Tanzania

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Abstract: Innovation is a key driver of economic growth and competitiveness, especially for SMEs in developing countries. However, the impact of different types of innovation on SME performance in Tanzania remains uncertain. Therefore, the purpose of this study was to explore how various forms of innovation affect the overall performance of SMEs in Tanzania. The study used the cross-sectional research design and random sampling to collect primary data from 162 SMEs in Mbeya. Data was analyzed using the Ordered Logistic Model. The results indicate that product innovation significantly boosts sales and customer satisfaction; process innovation enhances return on equity and product quality. On the other hand, marketing innovation drives sales growth and customer satisfaction while organizational innovation improving production quality and return on equity. These findings imply that innovation is crucial for improving SMEs' performance. Therefore, policymakers should create policies that encourage financial institutions and government bodies to offer grants for product innovation and subsidies for technology adoption. Additionally, they should provide advisory services and incentives for organizational restructuring to enhance the performance of SMEs.

Keyword: Innovation; SME performance; multidimensional approach.

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Introduction

Innovation and technological development are becoming increasingly powerful driving forces for generating competitive advantages and commercial success for businesses across a wide range of industries. Innovation is fundamental to business

competitiveness (Hanaysha et al. 2022a) and sustainable firm performance (Asad, 2018; Oduro, 2019; Kitole & Genda, 2024). Technology is referred to as machinery, tools and instruments to speed up business operations (Rahman et al. 2016; Dimoso & Andrew, 2021). On the other hand, innovation

manages to instill the culture of creating and implementing something new and valuable, whether it is a new product or service, production process or organizational structure (OECD, 2005; Thornhill, 2006; Mdoe et al. 2024).

The complexity of new technologies exceeds the capabilities of individual firms (Alamanda, 2020) and forces innovating firms to collaborate with other firms and organizations (Sprong et al. 2021; Utouh & Kitole, 2024; Yaghmaie & Vanhaverbeke, 2020) to mitigate the inherent risks associated with new products and markets. Thus, innovations are a crucial element of corporate strategies for various reasons, including the implementation of more efficient manufacturing processes, improved performance in the market, the cultivation of a positive reputation in the eyes of customers and ultimately, the attainment of sustainable competitive advantage.

SMEs and innovation are strongly intertwined; SMEs must engage in innovative activities to remain competitive, to grow and to ensure long-term survival in a dynamic and competitive environment (Heenkenda et al. 2022; Kitole & Sesabo, 2024; Nur et al. 2022). Given the intensifying competition in global markets, the increasing sophistication of products and processes, the fluctuations in market demand and the shorter life cycles of products (Hanaysha et al. 2022a), SMEs have begun to recognize the significance of innovation. In addition, rapidly changing technologies are diminishing the added value of existing products and services, making innovation more important for SMEs in creating and implementing something new and valuable to customers and other stakeholders, which enhances performance and sustainability (Gunday et al. 2011; Kitole, 2023). Therefore, by embracing innovation, SMEs can unlock new growth opportunities, build stronger customer relationships and create long-term value for stakeholders.

While innovation strategies are widely recognized for their potential to enhance SME performance, their impact in developing countries like Tanzania remains inconclusive (Jeje, 2022). This uncertainty arises from a range of factors, including the unique economic, regulatory and infrastructural challenges that SMEs in these regions face. SMEs in Tanzania often encounter significant hurdles in sustaining and improving their performance over time, including limited access to capital, inadequate infrastructure and regulatory constraints (Kiyabo & Isaga, 2019;

Kitole & Utouh, 2023). Consequently, about 70% of SMEs struggle with sustainability, frequently failing within five years of establishment (Ismail, 2022). Despite the potential benefits of innovation, there is a notable gap in research that specifically examine the impact of various forms of innovation on the SME performance in Tanzania (Ismail, 2022; Kitole et al., 2024). Existing studies (Jeje, 2022; Mwaifyusi & Dau, 2023; Erick et al. 2024; Ringo et al., 2023) primarily focused on the relationship between technological innovation (such as product and process innovation) and financial growth indicators like sales. However, these studies often overlooked other critical performance dimensions, such as quality improvement and non-technological innovations, which can also play a crucial role in business success.

Therefore, to address the gaps in understanding the impact of innovation on SME performance, this study delves into how different forms of innovation influence various aspects of business outcomes. By examining multiple facets of business performance, the study sought to provide practical insights and actionable recommendations for both business owners and policymakers. Therefore, the primary purpose of this study was to explore the relationship between various types of innovation and the overall performance of SMEs, offering constructive guidance for enhancing competitiveness and fostering sustainable growth in the SME sector.

Literature Review

This section presents a comprehensive literature review, which is divided into two main subsections: the theoretical underpinnings and the empirical review. The theoretical underpinning explored the foundational theories that inform and guide the study, providing a conceptual framework for understanding the key constructs and relationships. On the other hand, the empirical literature review provides a critical analysis of existing studies based on observed and measured data, highlighting findings, methodologies, and gaps in the current research on a specific topic.

Theoretical Underpinnings

This study employed the Schumpeterian theory of innovation, which was established in 1934 by Joseph Schumpeter (Schumpeter, 1934). Schumpeter's work has profoundly influenced theories of innovation, arguing that innovation drives economic development through a process of "creative destruction," wherein new technologies replace

outdated ones (Bloch, 2020; Tandon & Areshidze, 2022). Schumpeter identified two types of innovation: incremental innovations, which are continuous improvements to existing processes and products, and radical innovations, which cause significant disruptions and fundamentally alter industries. The Schumpeterian perspective emphasizes innovation as market experiments aimed at creating broad, sweeping changes that reshape markets and industries (OECD, 2018).

According to Schumpeter, innovation is a strategic business component, a deliberate choice among several investments aimed at building capacity for growth within enterprises. This theory underscores the importance of innovation for small and medium-sized enterprises, emphasizing that the primary objective of innovation is to enhance performance by either boosting demand or reducing costs. For SMEs, innovation is not merely an option but a necessity to maintain competitiveness and achieve sustainable growth.

In his 1934 work, Schumpeter outlined five types of innovation that businesses should consider to gain competitive advantages in a dynamic business environment: new products, production methods, markets, raw material sources and new market structures. Aligning with Schumpeter's ideas, the OECD (2005) later categorized innovations into four types: products, processes, marketing and organizational innovation. These categories highlight the breadth of innovation activities that can drive technological development and competitive advantage.

Product and process innovations are particularly relevant for SMEs as they enable the development of new or improved goods and services and enhance production efficiency. By implementing such innovations, forward-thinking SMEs can establish a competitive edge within their industry. This edge can translate into increased profits through higher market rates or a combination of reduced costs and increased profit margins compared to competitors' (Maldonado-Guzmán et al., 2018). Consequently, businesses that embrace innovation can achieve a more significant market presence and financial gains.

Furthermore, SMEs can boost demand by entering new markets, differentiating their products and influencing consumer demand for existing products. Improving operations through organizational change can also positively impact demand and cost

reduction (Oduro, 2019). A Schumpeterian viewpoint, therefore, views innovation as a critical strategy for achieving substantial and broad changes that reshape markets and industries (OECD, 2018). This perspective reinforces the notion that innovation can significantly improve SMEs' performance by increasing their capacity to innovate, adapt and thrive in a competitive environment.

Generally, the Schumpeter's theory of innovation provides a robust framework for understanding how SMEs can leverage innovation to drive economic growth and enhance performance. By embracing various types of innovation and viewing them as strategic business components, SMEs can achieve competitive advantages, expand their market presence and realize significant financial gains. The theory's emphasis on both incremental and radical innovations highlights the importance of continuous improvement and breakthrough changes in a dynamic business environments, making it highly relevant to challenges and opportunities faced by SMEs today.

Empirical Review

This section provides a comprehensive review of empirical studies related to the research area, focusing on three key aspects: studies on innovation, the relationship between innovation and SME performance, and the various types of innovation as applied in different business contexts. The empirical review synthesizes findings from previous research to identify trends, gaps and insights that are relevant to the current study, offering a detailed understanding of how innovation impacts business performance and how different types of innovation are implemented in various industries.

Innovation

German economist Joseph Schumpeter brought innovation to the forefront of economic development and entrepreneurship, defining it as creativity, Research and Development, new processes, products, services and technological advancement (Rosli & Sidek, 2013). Thornhill (2006) defined innovation as the process through which ideas develop into inventions launched onto the market as new products, processes or services. According to the OECD (2005), innovation refers to introducing new or significantly improved products, services, processes, marketing techniques or organizational methods within a business,

workplace or external relationships. In recent years, innovation has become a multidimensional concept in all social interactions and activities (Rosli & Sidek, 2013), playing a significant role in large enterprises and SMEs (Ismanu & Kusmintarti, 2019). Sharma (2016) asserted that innovation is an indispensable weapon for competition and is widely regarded as a fundamental principle of any organization's needs for business success. Innovation and entrepreneurship are well-known traits of SMEs. Specifically, SMEs must be innovative and creative to ensure growth, development and a competitive market advantage (Heenkenda et al. 2022; Mdoe et al. 2024). This study examined how innovation affects the overall performance of food processing SMEs in Tanzania. The choice of the food industry is due to the fact that it is a crucial sector in Tanzania's economy, with significant potential for growth and development; innovation in this industry can directly affect employment and value addition to agricultural products, making it essential for improving the livelihoods of local communities and ensuring competitive market advantage as described in Schumpeterian innovation theory (1934) and the OECD in 2005.

SME Performance

The term "SME performance" is dynamic and complex, with different meanings possible as long as it refers to firm performance, functionality or operational outcomes. Performance is a multifaceted notion with many other labels, including growth, survival, success and competitiveness (Rosli & Sidek, 2013; Mohamed et al., 2022; Mbaso et al. 2024). According to Taouab and Issor (2019), strong performance and organizational efficiency were synonymous from the 1950s to the end of the twentieth century. Organizational efficiency measures how well an organization accomplishes its goals with limited resources and effort from its members as a social system. During the first years of the 21st century, firm performance was emphasized by the organization's ability to efficiently use resources to achieve objectives aligned with its users' needs (Taouab & Issor, 2019). Therefore, the performance of SMEs was determined by how well it achieves its internal and external goals.

Depending on organizational goals, different methods are adopted by different firms to measure their performance. Financial measures such as return on assets (ROA), sales turnover, net profit and return on equity (ROE) are commonly used by

SMEs, particularly in the food processing industry, for performance assessment (Cho et al. 2019). However, Rosli and Sidek (2013) argued that financial elements are not the only indicator for measuring firm performance. Supporting these opinions, Gunday et al. (2011), Kellermanns et al. (2012) and Kitole et al. (2024) assert that, in measuring SME performance, it is essential to combine it with non-financial measurements, such as stakeholder satisfaction, market share, productivity and quality in order to adapt to the changes of internal and external environments. By measuring these factors, businesses can comprehensively understand their performance and identify areas for improvement. Therefore, the study uses financial and non-financial measures precisely: growth in sales, return on equity, customer satisfaction, and production quality to measure SMEs' performance in the food processing industry in the period under review.

To enhance their performance, SMEs rely on the strategies they choose to implement. Therefore, SMEs must adopt effective strategies tailored to their needs and goals. Innovation is one of the fundamental strategies for the performance of SMEs (Asad, 2018). Thus, innovations (product, process, marketing and organizational innovation) constitute an indispensable component of the SME's strategies for several reasons, such as to perform better in the market in order to increase sales and generate return on equity, to seek positive customer satisfaction and to apply more productive manufacturing processes for production quality.

Innovation and SME Performance

Various scholars explained the critical role of innovation as a means of business sustainability (Hanaysha et al. 2022a; Soomro (2023), competitive advantage and superior business performance (Exposito & Sanchis-Llopis, 2019; Oduro, 2019; Rosli & Sidek, 2013). According to Schumpeter (1934) and OECD (2005), innovation can manifest in product, process, marketing, organisation, factor and technological discovery, but the first four dimensions are more familiar in the innovation and SME performance literature (see Asad, 2018; Oduro, 2019), which, when implemented within SMEs, would result in improved business performance.

Product Innovation

Innovation in products and services is crucial for businesses to thrive in a competitive market. As per the OECD's definition in 2005, product innovation

involves creating a new or improved good or service with unique attributes or intended applications. Product innovation can include advancements in technical specifications, materials, software integration, usability, or other functional aspects of the product or service. Alamanda (2020) further explain that innovative products give firms opportunities for growth, profitability, and branching out into new markets, enabling businesses to improve their readiness for action.

Several studies have confirmed the positive impact of product innovation on SMEs' performance. Ogujiuba and Nico (2020) studied 153 SMEs in Batam City, Indonesia and found that product innovation significantly impacts competitive advantage and SME performance. Maldonado-Guzmán et al. (2019) proved that product innovation significantly affects business returns in Mexico. In more detail, Oduro (2019) demonstrated that product innovation benefited SMEs in Ghana's Cape Coast Metropolis by increasing sales, market share, competitiveness and customer satisfaction. Therefore, the evidence highlights the importance of continuously improving products and services to ensure SMEs remain relevant and valuable to consumers.

Process Innovation

Process innovation, in general, is the act of reengineering and enhancing a business process's internal operations (Cumming, 1998). As a crucial element of business operations, this process comprises a range of activities, including technical design, Research and Development, manufacturing, management and commercial operations (Freeman, 1982). OECD (2005) defined process innovation as successfully implementing a new or significantly improved production or delivery method. The process encompasses significant enhancements to techniques, equipment and software that lead to improved product quality, the creation of new or significantly improved products and reduced unit costs for production or delivery.

Process innovation is essential in a firm's manufacturing process, giving it an advantage over its competitors. Studies revealed that process innovation is significantly and positively related to the performance of SMEs (Abdilahi et al. 2017; Kimathi et al. 2019; Matekenya & Moyo, 2022). A recent study by Hanaysha et al. (2022b) confirmed that process innovation can give a business an advantage in the manufacturing environment, such

as cost-effectiveness, production speed and consistency of quality, which can hinder competitors. Similarly, Carboni and Russu (2018) argued that introducing process innovations may help organizations compete better and innovation plays a vital role in boosting productivity. In line with this reasoning, Asad (2018) conducted a study in Sialkot, Pakistan. Process innovation significantly and positively influenced financial performance, customer performance, internal business process performance, and learning and growth.

Market Innovation

Market innovation involves optimizing the market mix and selection for customer preferences (Sprong et al. 2021). Ungerman et al. (2018) defined marketing innovation as the search for creative solutions to problems and needs. Marketing innovation may involve recent promotional efforts and seek to engage clients and consumers on unique and different levels (Kahn, 2018). OECD (2005) described marketing innovation as implementing new marketing methods or strategies, incorporating considerable product placement, pricing, promotion or design adjustments. Companies utilize marketing innovations to boost their sales by catering to customer needs, exploring new markets or repositioning products (OECD, 2005; Eric et al. 2024). Ungerman et al. (2018) support this notion by stating that businesses must continuously create new products and strategies to enhance their competitiveness and performance. In today's business world, marketing innovations are essential for creating demand for products and services. Emphasizing the unique qualities of a good or service increases brand recognition and awareness.

Researchers (Kimathi et al. 2019; Jeje, 2022) confirmed that market innovation is crucial for the performance of SMEs in developed and emerging economies. In their study, Musawa and Ahmad (2018) found a significant positive correlation between market innovation, which measures entrepreneurial spirit, and competitive aggressiveness and performance among firms. In their study in Pakistan, Wadho and Chaudhry (2018) suggested that market innovation can boost sales and profits for innovative SMEs by creating more product demand. According to a study by Mabenge et al. (2022) in Harare, Zimbabwe, marketing innovation was the only type of innovation that significantly impacted small businesses' financial and non-financial performance.

Organizational Innovation

Organizational innovation encompasses changes in workplace settings, new management styles and organizational structures. It involves the implementation of fresh management and operational practices, such as team collaboration, supply chain management, quality control systems and modifications to internal structures and procedures (Carboni & Russu, 2018). This type of innovation aims to enhance an organization's efficiency and effectiveness by fostering a more dynamic and adaptable environment. OECD (2018) highlights that organizational innovations can significantly improve performance by reducing costs, enhancing employee productivity, accessing external knowledge and other non-tradable assets, and lowering supplier expenses. By adopting these innovative practices, organizations can achieve a competitive edge and drive sustainable growth.

Several studies have supported the importance of organizational innovation for SMEs' performance (Expósito & Sanchis-Llopis, 2019, Maldonado-Guzmán et al. (2019, Oduro, 2019). Asad (2018) found that organizational innovation positively influenced Pakistan's financial performance, internal business process performance and learning and growth. Similarly, in their study, Expósito and Sanchis-Llopis (2019) confirmed that organizational innovation significantly increases the likelihood of cost reduction and improved business performance for Spanish SMEs. In a recent study by Boubakary (2021), who researched the impact of managerial innovation on the performance of SMEs in Africa, it was argued that through two main components of organizational innovation, namely "changes in management practices" and "changes in organizational structure," businesses can increase their market share, production efficiency, and bottom line, leading to an overall improvement in performance.

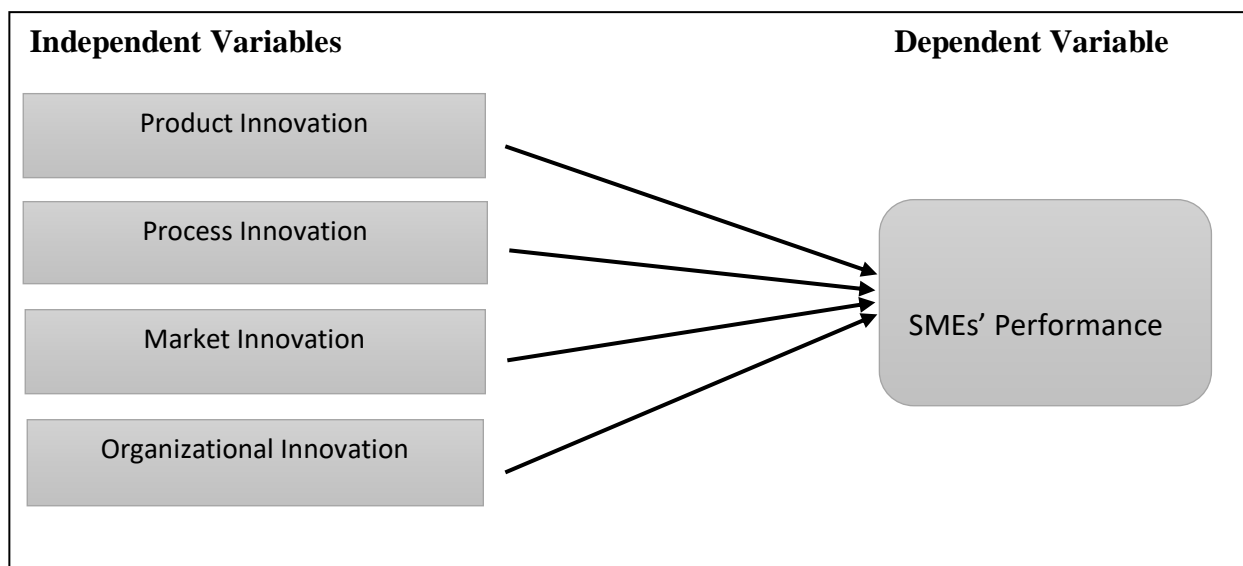


Figure 1: Conceptual framework

The conceptual framework of the study is depicted in Figure 1, providing an illustration of how types of innovation will influence the performance of SMEs. The study examines and evaluates four types of innovation, namely product, process, marketing and organizational innovation, which are treated as independent variables. The proposed conceptual framework demonstrates that the implementation of these particular innovations has the potential to have favorable impacts on the performance of SMEs. Four financial and non-financial performance variables—sales growth, return on equity, customer satisfaction and production quality—measure the

performance of SMEs, which is the dependent variable in this study.

Methodology

This section provides a detailed account of the methodological approach employed in the study. It includes comprehensive explanations on the research design, population and sampling methods, data collection instruments and procedures for ensuring validity and reliability. Additionally, it covers the statistical treatment of data, highlighting the descriptive and inferential analyses used. Ethical considerations are also addressed, ensuring

adherence to ethical standards throughout the research process. Lastly, the section outlines the analytical modeling techniques utilized to explain the relationships between the variables, providing a robust framework for analyzing the data and drawing conclusions.

Design

This study employed a cross-sectional research design, which facilitated the collection of data at a single point in time. This design was chosen to effectively establish and analyze the relationships between the variables of interest (Kitole & Genda, 2024). By capturing a snapshot of the population, the cross-sectional approach enabled the researchers to identify correlations and draw meaningful conclusions about the interplay between the different factors under study.

Population and Sampling

The population of interest comprised small and medium enterprise owners in the Mbeya Region, totaling 342 individuals. The researchers used random sampling techniques to select a representative sample of 162 SMEs. The sampling ensured that each member of the population had an equal chance of being included in the study, enhancing the generalizability of the findings to the larger population. The food processing industry was selected because it accounts for most manufacturing SMEs (Andreoni, 2017). The decision to determine the study participants or SMEs that have engaged in business activities at least within the last three years was based on past studies on business performance and innovation (Gunday et al. 2011; Herte et al. 2021), which enabled the researchers to obtain sufficient and relevant data.

Instruments

Data collection instruments consisted of a structured questionnaire administered to the sampled SMEs engaging in food processing. The structured questionnaire was designed to gather quantitative data on various aspects, including income, innovations strategies and socioeconomic characteristics of the SMEs owners. The questionnaire format facilitated systematic data collection and enabled efficient analysis of responses.

Validity and Reliability

Validity and reliability were ensured through rigorous pre-testing and piloting of the questionnaire prior to the main data collection

phase. This involved assessing the clarity, comprehensiveness and relevance of the questionnaire items as well as conducting reliability tests to ensure consistency in responses. To evaluate the reliability of the innovation constructs, Cronbach's alpha was employed. Internal consistency measures how related items in a scale are in measuring the same construct (Tavakol & Dennick, 2011). Grayson and Martinec (2004) suggested that the reliability of the variables greater than 0.7 are the variables with great internal consistency while those below 0.7 are questionable. However, Maddala and Miller (1989) suggested alpha scores greater than 0.6 represent good data reliability. In this study, the Cronbach Alpha score was above 0.7, meaning there was internal consistency, and hence, the data used was reliable.

Statistical Treatment of Data

The statistical treatment of data involved both descriptive and inferential analyses. Descriptive analysis was used to summarize and describe the main features of the data, providing a clear overview of the sample characteristics. Inferential analysis, specifically regression analysis, was employed to examine and establish the relationships between the variables of interest.

Ethical Considerations

Ethical considerations were paramount throughout the research process to ensure the integrity and ethical standards of the study. Informed consent was obtained from all participants, ensuring that they were fully aware of the study's purpose, procedures and their rights, including the right to withdraw at any time without any consequences. Confidentiality was rigorously maintained, with all personal data anonymized and securely stored to protect participants' privacy. Additionally, the study adhered to ethical guidelines and standards set by relevant ethical review boards, ensuring that all research activities were conducted with the highest ethical standards.

Analytical modeling

The ordered logistic model established the impact of innovations on the performance. It was chosen due to its suitability for handling ordinal dependent variables, such as the outcome variable in this study, which includes categories of high performance, medium performance, and low performance. This model allows for the analysis of the relationship. The model was as follows:

$$y^* = \beta' x_i + \varepsilon_i \quad -\infty < y_i^* < \infty$$

Whereas y_i^* represents levels of Innovation, β' is a vector of parameters that should be estimated, x_i is an observed vector of non-random explanatory variable, which shows the characteristic of i^{th} Variable and ε_i presents error term which is logistically distributed. Since y_i^* is a latent variable,

standard regression techniques are not applicable to estimate the sample size. If y_i is considered as a discrete and observable variable which shows different levels innovation practice, the relation between latent variable y^* and observable variable y_i is obtained from ordered logit model as follows:

$$\begin{aligned} y_i = 1 & \quad \text{if } -\infty \leq y_i^* < \mu_1 & \quad i = 1, \dots, n \\ y_i = 2 & \quad \text{if } \mu_1 \leq y_i^* < \mu_2 & \quad i = 1, \dots, n \\ y_i = 3 & \quad \text{if } \mu_2 \leq y_i^* < \mu_3 & \quad i = 1, \dots, n \\ y_i = J & \quad \text{if } \mu_{j-1} \leq y_i^* < +\infty & \quad i = 1, \dots, n \end{aligned}$$

In which 'n' is the value for the sample size, ' μ ' and ' s ' are the thresholds that define observed discrete answers and should be estimated. The probability of $y_i = j$ should be calculated by the following relation:

$$\Pr(y_1 = j) = \Pr(y_1 \geq \mu_{j-1}) = \Pr(\varepsilon_1 \geq \mu_{j-1} - \beta x_1) = F(\beta x_1 - \mu_{j-1})$$

In cumulative probability expression, ordered logit model estimates the likelihood of person 'I' to be at ' j^{th} ' level or less (1 ... , j - 1). It should be noted that the answer groups in ordered logit model are ordered. Ordered logit model is expressed as follows:

$$\log \left[\frac{y_j(x_i)}{1 - y_i(x_i)} \right] = \mu_j - [\beta_1 x_{1i} + \beta_2 x_{2i} + \dots + \beta_k x_{ki}]$$

Whereby $j = 1 \dots, J$; $i = 1 \dots, n$

In which, y_j is a cumulative probability of the following:

$$y_j(x_i) = y(\mu_j - \beta' x_i) = p(y_i \leq j | x_i)$$

β' is the column vector and of $\beta_1, \beta_2 \dots \beta_3$ parameters and x_i is the column vector of explanatory variables. μ_j is only dependent on probability of predicting category and is not dependent on explanatory variables unlike the independent part described in the following expression that:

$$\beta_1 x_{1i} + \beta_2 x_{2i} + \dots + \beta_k x_{ki}$$

These two characteristics guarantee that the answers groups are ordered and show that the results are a series of parallel lines. Parameters are estimated by maximum likelihood estimation method, which maximizes the probability of categorization. The calculation of the marginal effect of one unit in x_k predictor on the probability of ' j ' category is as follows:

$$\frac{\delta P(y_i=j | x_i)}{\delta x_k} = \left[\frac{\delta y(\mu_j - \beta' x_i)}{\delta x_k} - \frac{\delta y(\mu_{j-1} - \beta' x_i)}{\delta x_k} \right] = [\sigma(\mu_{j-1} - \beta' x_i) - \sigma(\mu_j - \beta' x_i) \beta_k]$$

Whereas

$$\mu_j = +\infty, \mu_* = -\infty, \sigma_j(x_i) = \frac{\delta y_i(x_i)}{\delta x_k}$$

Making decisions about using variables' value in estimation is very important because the marginal effect depends on the values of all independent variables. Since total probability always equals to 1, then the total marginal effect for each variable equal to 0. Not only that, but also it should be noted that the marginal effect is not a direct binary variable, and it can be obtained by calculating the difference between the two possible probabilities. Therefore, in this study the ordered equity levels under examination have been described as.

$$y^* = \begin{cases} \text{High} & \text{if } y_i = 1 \\ \text{mdeium} & \text{if } y_i = 2 \\ \text{low} & \text{if } y_i = 3 \end{cases}$$

Therefore, this ordered logistic regression model is particularly effective in capturing the in-depth relationships between innovation types and various performance indicators of SMEs. The model accounts for the ordinal nature of the dependent variables, such as high, medium, and low performance levels. By doing so, it allows for a more precise estimation of the impact of innovations on different performance outcomes. This approach ensures that the marginal effects of each independent variable are accurately reflected, providing a comprehensive understanding of how innovations contribute to SME performance across multiple dimensions.

Findings and Discussion

This section presents the results of the study based on the analysis of data. The section is guided by one question: Do innovations impact the SMEs performance?

The ordered logistic regression model was used to estimate the impact of different types of innovations on the performance of SMEs. Table 2

presents the results of four distinct models, each evaluating the effect of innovations on specific performance indicators: sales increase, return on equity, customer satisfaction and production quality. By separating the model estimates, this study allows for a clearer analysis of how each innovation type contributes to specific aspects of the SME performance.

The results in Table 1 reveal that there are two significant performance indicators for product innovation, supporting the positive impact of product innovation on SMEs' performance. The results indicate that introducing innovative products significantly boosts SMEs' success, particularly by increasing sales ($\beta = 0.628$, $p < 0.05$) and enhancing customer satisfaction ($\beta = 0.549$, $p < 0.05$).

This suggests that innovative products provide SMEs in the food processing sector with opportunities for sales growth and meeting customer expectations, enabling firms to reach new markets and offer diverse product options in response to rising consumer sensitivity to food products.

Table 1: Impact of innovations on SME's performance

	(1)	(2)	(3)	(4)
Variables	Sales Increase	Return on Equity	Customer satisfaction	Production Quality
Product Innovation	0.628** (0.034)	-0.238 (0.173)	0.549** (0.164)	0.106 (0.191)
Process Innovation	-0.398 (0.288)	0.465** (0.016)	0.0479 (0.290)	0.479** (0.138)
Market Innovation	0.728** (0.324)	0.0916 (0.176)	0.586** (0.230)	-0.102 (0.196)
Organizational Innovation	0.154 (0.198)	0.317*** (0.006)	0.0482 (0.157)	0.290** (0.032)
/cut1	1.621 (3.140)	3.374* (1.885)	2.64 (2.214)	1.057 (2.251)
/cut2	3.006 (3.154)	4.802** (1.897)	4.398** (2.162)	1.793 (2.171)
/cut3	3.552 (3.175)	7.970*** (2.004)	5.227** (2.162)	4.067** (2.069)
Observations	162	162	162	162

These findings align with previous studies by Expósito and Sanchis-Llopis (2019), Asad (2018) and Maldonado-Guzmán et al. (2018), who revealed that product innovation positively affects sales growth. Additionally, the findings complement Oduro's (2019) results, which reported strong influence of

product innovation on customer satisfaction in Ghana.

Furthermore, the results in Table 1 show that process innovation positively affects return on equity, customer satisfaction, and product quality. Process innovation significantly boosts return on

equity ($\beta = 0.465$, $p < 0.05$) and production quality ($\beta = 0.479$, $p < 0.05$) of SMEs. This implies that process innovation provides businesses with advantages in manufacturing and processing environments, such as cost-effectiveness, production speed, quality consistency, and market responsiveness. These findings align with the study of Expósito and Sanchis-Llopis (2019), which found that process innovations significantly and positively affect both increased productive capacity and improved product quality. Consistent with this argument, Hanaysha et al. (2022b) concluded that process innovation offers businesses advantages in the manufacturing environment, such as cost-effectiveness, production speed and quality consistency, which can provide a competitive edge. This study suggests that enterprises that do not adopt process innovation may risk falling behind their rivals while those embracing these innovations are more likely to succeed.

Moreover, the results in Table 1 show that implementing marketing innovation significantly boosts sales growth ($\beta = 0.728$, $p < 0.05$) and customer satisfaction ($\beta = 0.586$, $p < 0.05$) for SMEs. This indicates that SMEs need marketing innovation to increase sales by meeting customer needs, accessing new markets or repositioning products. These findings are consistent with Oduro (2019), who reported that marketing innovation is strongly linked to improved competitiveness, market share, sales and client satisfaction for SMEs. Similarly, Wadho and Chaudhry (2018) reported that marketing innovation increases sales due to rising product demand, leading to higher profits for innovative SMEs in Pakistan. These findings highlight the importance of marketing innovation in creating brand recognition, establishing brand identity and ensuring product differentiation. By investing in marketing innovation, businesses can drive demand, increase sales and achieve greater success.

Finally, results in Table 1 show that organizational innovation has a significant positive effect on both return on equity and production quality. Specifically, organizational innovation enhances production quality ($\beta = 0.290$, $p < 0.05$) and return on equity ($\beta = 0.317$, $p < 0.01$). This indicates that organizational innovations improve company performance by reducing overhead or transactional costs, increasing employee productivity, or lowering supplier costs. Previous research supports these findings, showing that implementing innovative practices within organizations leads to higher returns (Maldonado-

Guzmán et al., 2019), increased profit and employment growth (Oduro, 2019), and reduced costs, thereby boosting business performance (Expósito & Sanchis-Llopis, 2019).

Conclusion and recommendations

Conclusion

Based on the findings, the study concludes that product innovation boosts sales growth and customer satisfaction, which can enable market expansion. Process innovation enhances return on equity and production quality. Marketing innovation increases sales and customer satisfaction while organizational innovation positively affects SMEs performance by improving production quality and return on equity. These findings imply a need to consider the established dependent factors in enhancing the performance of small and medium entrepreneurs in Tanzania.

Recommendations

Therefore, policymakers should create policies that encourage financial institutions and government bodies to offer grants for product innovation and subsidies for technology adoption. Additionally, they should provide advisory services and incentives for organizational restructuring to enhance SME performance.

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