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Innovation Dynamics and Business Growth in Philippines' Micro, Small, and Medium-Sized Enterprise Bakeries: The Moderating Role of Entrepreneurial Experience in Product and Process Innovations

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ABSTRACT

This study examines how process and product innovation drive business growth in MSME bakeries, with entrepreneurial experience as a moderating factor. Data from 227 respondents, analyzed using PLS-SEM, shows that process innovation improves efficiency, reduces costs, and boosts productivity, contributing to business growth. Product innovation also enhances growth by helping businesses adapt to consumer preferences and differentiate offerings. Entrepreneurial experience strengthens the link between process innovation and growth indicating that industry expertise enhances operational improvements. However, its effect on product innovation is insignificant, which suggests that other market factors play a greater role. MSME bakeries must invest in automation and workflow optimization to improve efficiency and conduct market research to align products with consumer trends such as health and sustainability. Business owners enhance innovation strategies through continuous learning via mentorship and industry networks. Policymakers provide support through financial aid and technical training. Future research explores factors such as digital transformation and technological adaptation to develop a better understanding of how innovation drives business growth.

Keywords: Business Growth, Entrepreneurial Experience, Product Innovation, Process Innovation, Micro, Small, and Medium-Sized Enterprises
JEL Classifications: M100, M110, O310

1. INTRODUCTION

Innovation is widely recognized as a critical driver of survival and long-term business growth, particularly for micro, small, and medium-sized enterprises (MSMEs) operating in highly competitive industries. Bayram (2024) emphasizes that businesses rely on innovation to stand out, improve efficiency, and adapt to changing consumer needs. This is especially true in the bakery industry, where businesses must adapt to market trends, evolving consumer preferences, and increasing competition. As observed by Królak et al. (2022), bakeries that fail to innovate, whether in terms of product development, service enhancements, or business model transformations, risk stagnation or eventual decline. Thus, for MSMEs in the bakery sector, embedding innovation into their core strategies is not just an option but a necessity for sustainable growth (Alonzo et al., 2025; Kalathingal and Ambrammal, 2025; Nuragita and Nursyamsiah, 2024).

In the Philippines, MSMEs have an important role in economic development as primary drivers of employment and revenue generation. The Philippine Statistics Authority, as reported by Recide (2018), dentified the bakery sector as the largest segment within the manufacturing industry, comprising approximately 6,704 establishments and accounting for 27.4% of the sector. Additionally, this industry employs around 87,477 workers, representing 6.8% of the total manufacturing workforce. The growing demand for bakery products has fueled expectations of a 5% annual growth in industry, reaching a market value of $2.5 billion by 2027 (Lagare, 2023). Similarly, Britchenko and Mickiewicz (2022) project that the total market volume for bakery products will reach 34.90 billion kilograms by 2028. These figures emphasize the bakery sector's significant economic contribution and the increasing need for businesses to leverage innovation as a means of sustaining growth and maintaining competitiveness.

Recent research has examined the impact of innovation on the bakery industry's long-term viability. Investment in research, development, machinery, and equipment has been shown to significantly improve corporate growth in the bakery sector (Osorio and María, 2020). Process innovation, which focuses on improving production efficiency and operational workflows, has been consistently linked to cost reductions and increased profitability. Studies indicate that these innovations not only lower unit costs but also drive higher sales by improving product quality (Rammer, 2023). Comparably, in the food sector, process innovation applications have demonstrated direct and indirect impacts on business profit through cost improvements, increased product quality, and customer satisfaction (Felekoglu and Tasan, 2019).

Enhanced innovation processes are key drivers of bakery growth, particularly for small and medium-sized enterprises (Jeje et al., 2021). Sustainable product innovations, such as fiber-enriched bread, are driven by consumer expectations and new trends that contributes to both nutritional value and environmental benefits (Królak et al., 2022). Research consistently shows that product innovation, which involves the development of new or improved baked goods, enhances consumer appeal and market share. Various factors drive product innovation particularly in the development which include quality optimization, cost reduction, and changing consumer demands (Cauvain, 2016). The process involves idea generation, experimentation, and scaling up, with human creativity that has significant impact. A study on baked steamed bread found that product innovation positively affects consumer satisfaction which results in increased sales (Supatminingsih et al., 2023). Furthermore, research indicates a relationship between product development, innovation, and increased market share, which highlights the importance of introducing new products or finding new uses for existing ones to boost sales and profits and drive growth (Guiné et al., 2020).

Despite the well-documented benefits of innovation in MSME bakeries, limited research has explored the role of entrepreneurial experience in moderating its impact on business growth, particularly in Lanao del Norte and Misamis Oriental. Entrepreneurial experience refers to a business owner's or manager's prior experience in managing or owning a business, whether in the same industry or a related field which has been linked to improved strategic decision-making and innovation performance (Chen and Wu, 2024). Researchers indicate a positive correlation between prior experience and firm outcomes, with stronger effects in early-stage businesses (Jiao et al., 2023). Nonetheless, little is known about whether these findings extend to the bakery sector, where innovation significantly influences the growth of MSME bakeries. In the bakery sector, innovation is a key driver of MSME growth, with enhanced innovation processes significantly impacting output levels (Alonzo et al., 2025; Jeje et al., 2021). Workforce behavior acquired competencies through training, and reward systems further shape this relationship. However, existing research has not fully examined how entrepreneurial experience interacts with these factors.

While previous studies suggest that entrepreneurial experience positively influences business growth through product and process innovations, limited research explores its role in shaping the strength of this relationship, particularly within the bakery sector. The extent to which entrepreneurial experience amplifies or constrains the impact of innovation on MSME bakery growth remains unclear, leaving a critical gap in the literature. To address this, the study examines how product and process innovations drive business growth while assessing the moderating effect of entrepreneurial experience. By clarifying this relationship, the research aims to provide deeper insights into how entrepreneurial expertise influences innovation outcomes. This understanding is essential for policymakers, business owners, and industry stakeholders in developing strategies that promote sustainable, innovation-driven growth in the bakery sector.

2. LITERATURE REVIEW

2.1. Stimulus-Organism-Response (S-O-R)

The stimulus-organism-response (S-O-R) model explains how external stimuli influence internal cognitive or strategic processes, which in turn shape observable outcomes (Lee and Yun, 2015). While originally developed in consumer behavior research, the S-O-R framework has increasingly been applied in organizational and managerial contexts to explain how businesses and decision-makers respond to environmental and strategic stimuli (Dela Peña et al., 2025; Roy and Islam, 2017).

Alternative theoretical perspectives such as the resource-based view (RBV) and Dynamic Capabilities Theory offer valuable insights into firm competitiveness; however, these frameworks primarily emphasize resource ownership and long-term capability reconfiguration (Damanpour and Aravind, 2012). In contrast, the S-O-R model is particularly suitable for this study because it captures the behavioral and decision-oriented process through which entrepreneurs interpret and act upon innovation-related stimuli, leading to measurable performance outcomes. Given that MSME bakeries operate in dynamic environments with limited formalized structures, a framework that explains how innovation inputs are processed by entrepreneurs is more appropriate than capability-centric models.

In this study, product innovation and process innovation represent the stimulus (S), as they introduce external and internal changes that require strategic responses from MSME owners. These innovations compel entrepreneurs to reassess production methods, product offerings, and market positioning. Entrepreneurial experience constitutes the organism (O), reflecting the entrepreneur's accumulated knowledge, cognitive frameworks, and decision-making capability that shape how innovation stimuli are perceived and implemented. Business growth represents the response (R), manifested through increased revenues, profitability, market expansion, and operational performance.

This alignment allows the S-O-R framework to explain not only the direct effects of innovation on growth but also the contingent role of entrepreneurial experience in strengthening or constraining these effects. Figure 1 illustrates the S-O-R framework applied in this study, showing how product and process innovations (stimuli) are interpreted through entrepreneurial experience (organism), leading to business growth outcomes (response).

2.2. Process Innovation and Business Growth

Process innovation refers to improvements in production methods, operational workflows, and the adoption of new technologies that enhance efficiency and reduce costs (Damanpour and Aravind, 2012; Felekoglu and Tasan, 2019). Unlike product innovation, which focuses on market-facing changes, process innovation primarily strengthens internal operations by optimizing resource utilization, minimizing waste, and improving consistency in output. In the bakery industry, process innovation plays a critical role in maintaining competitiveness, particularly among MSMEs operating under cost and capacity constraints (Carine et al., 2025). The adoption of automated baking equipment, improved inventory systems, and standardized production techniques allows bakeries to increase output while controlling operational expenses (Abellana and Alonzo, 2025; Nguyen et al., 2023). Empirical studies consistently demonstrate that businesses implementing process innovation achieve higher productivity and profitability, which translates into sustained business growth (Abellana and Alonzo, 2025). Given these efficiency-driven benefits, process innovation is expected to have a direct and positive effect on business growth among MSME bakeries.

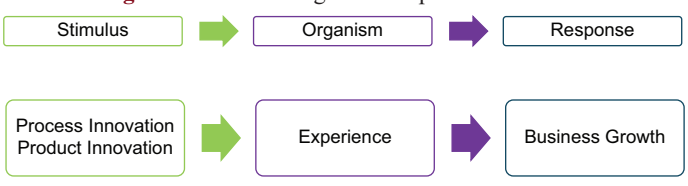
H_1: Process innovation has a significant effect on business growth.

2.3. Product Innovation and Business Growth

Product innovation involves the development of new products or the enhancement of existing offerings to better align with consumer preferences and market trends (Baregheh et al., 2009; Primadhani and Susilawati, 2023). In contrast to process innovation, product innovation directly influences customer perceptions by improving product attributes such as variety, quality, functionality, and health value. Product innovation has become increasingly important as consumers demand healthier, premium, and customized baked goods. The introduction of gluten-free, organic, or fortified products enables MSME bakeries to differentiate themselves and access niche markets (Królak et al., 2022). Prior research confirms that product innovation enhances customer satisfaction, brand loyalty, and market share, thereby supporting long-term business growth (Alonzo et al., 2025; Guiné et al., 2020). Although product innovation often requires higher investments in research and development, its market-oriented nature makes it a critical strategy for MSMEs seeking competitive advantage and growth in dynamic industries.

H_2: Product innovation has a significant effect on business growth.

Figure 1: Stimulus-organism-response framework



2.4. Entrepreneurial Experience as a Moderating Variable between Process Innovation and Business Growth

While process innovation improves efficiency and productivity, its effectiveness depends largely on the entrepreneur's ability to implement and manage operational changes. Entrepreneurial experience encompasses accumulated industry knowledge, managerial skills, and prior exposure to decision-making under uncertainty, all of which influence how innovation is executed (Chen and Wu, 2024). Experienced entrepreneurs are better positioned to evaluate technological investments, align process improvements with business goals, and manage operational risks. Research indicates that entrepreneurs with prior experience implement process innovations more effectively, leading to improved scalability, cost efficiency, and performance outcomes (Frare and Beuren, 2022; Ndhlovu and Hapompwe, 2024). Their familiarity with supplier networks, workforce management, and production constraints strengthens the link between process innovation and business growth (Angel Ferrero and Bessière, 2020). Experienced owners are more likely to integrate automation, optimize workflows, and standardize production processes without disrupting daily operations. This suggests that entrepreneurial experience enhances the positive effect of process innovation on business growth.

H_3: Entrepreneurial experience has a significant moderating effect on the relationship between process innovation and business growth.

2.5. Entrepreneurial Experience as a Moderating Variable between Product Innovation and Business Growth

Although product innovation contributes to business growth, its success depends less on operational expertise and more on market acceptance, branding, and consumer preferences. Entrepreneurial experience may support strategic decision-making, but it does not necessarily guarantee successful product innovation outcomes, particularly in consumer-driven industries such as bakeries. Product innovation often requires specialized competencies in product design, food science, and marketing, which may extend beyond the entrepreneur's prior business experience (Alonzo and Ganas, 2025; Grilli, 2022; Palangan et al., 2025). Studies suggest that inexperienced entrepreneurs may struggle with product positioning and cost management, while experienced entrepreneurs may rely on established market assumptions that limit experimentation

and creativity (Abellana and Alonzo, 2024; Lahiri and Wadhwa, 2021). New product success is frequently influenced by external factors such as changing consumer tastes, health trends, and competitive offerings. As a result, entrepreneurial experience may not significantly strengthen the relationship between product innovation and business growth, as product performance is shaped more by market dynamics than managerial tenure alone.

H_4: Entrepreneurial experience has a significant moderating effect on the relationship between product innovation and business growth.

2.6. Research Framework

Figure 2 presents the proposed research framework, highlighting the hypothesized direct and moderating relationships examined in this study.

3. RESEARCH METHODOLOGY

3.1. Methodology

The study employed a quantitative correlational research design to examine the relationships between key variables. Data were collected through online questionnaires and face-to-face interviews with respondents. A purposive sampling method was used to survey selected bakeries in Misamis Oriental and Lanao del Norte that met the Department of Trade and Industry (DTI) criteria for micro, small, and medium-sized enterprises (MSMEs). Three sampling criteria were applied. First, the business must have operated for at least 5 years. Second, the respondent, whether the owner or manager, must be actively involved in daily business operations. Lastly, the business must be classified as an MSME based on DTI guidelines.

A total of 227 respondents were successfully contacted and surveyed. The final sample size was determined based on the number of respondents who were contacted, visited, and ultimately agreed to participate while providing complete answers and accurate information in the questionnaire. This also to ensure compliance with the minimum sample size of 200, as recommended by Kline (2016), for studies utilizing the structural equation modeling (SEM) method.

The study included a total of 20 items or indicators, all rated on a 5-point Likert scale. Smart PLS-SEM was used to analyze the data gathered from the survey questionnaires. The partial least squares structural equation modeling (PLS-SEM) approach was chosen due to its growing popularity among marketing researchers for evaluating new theoretical models with complex social structures. This method is particularly suitable for intricate models with multiple constructs. Given that the current model includes four variables: One moderator, two independent variables, and one dependent variable, PLS-SEM was deemed an appropriate analytical tool for this study.

4. RESULTS

4.1. Demographic Profile

The study analyzed data from 227 MSME bakeries operating in Misamis Oriental and Lanao del Norte. Table 1 shows that most respondents were owners or owner-managers, indicating that strategic and operational decisions, including innovation adoption, are largely centralized at the ownership level. The majority of bakeries had been operating for 5-10 years, reflecting the relatively early-stage nature of many enterprises in the region. In terms of size, most businesses were classified as micro and small enterprises, with limited asset bases and fewer than 10 employees. This highlights the resource-constrained environment in which these bakeries operate and underscores the importance of innovation as a growth mechanism. Only a small proportion of businesses qualified as medium-sized enterprises, suggesting that scaling beyond the micro and small level remains a significant

Figure 2: Research framework

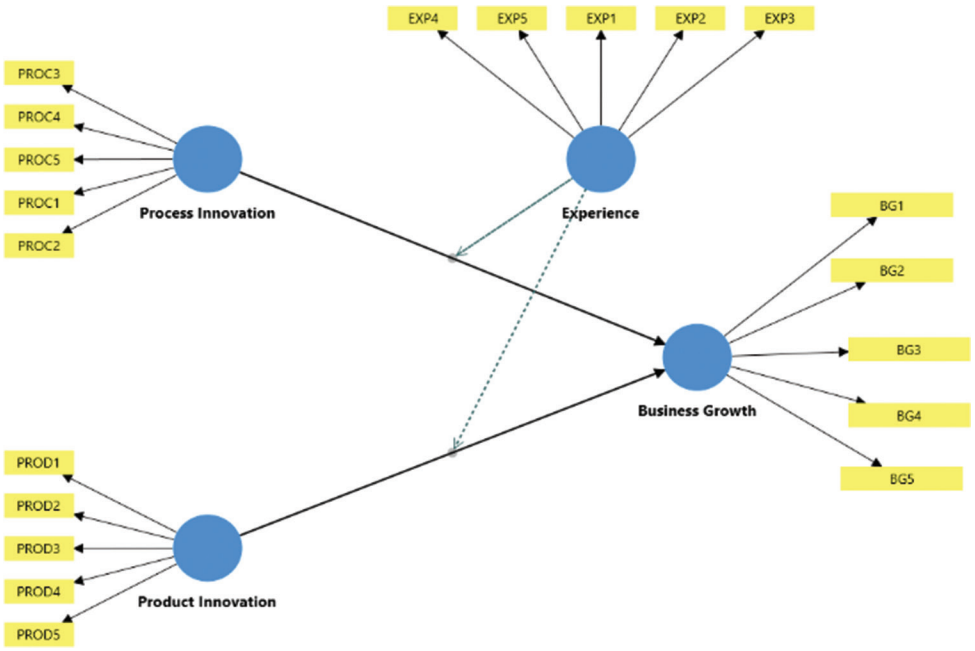


Table 1: Demographic characteristics of respondents

Description criteria	f	Percentage	Description criteria	f	Percentage
Location of MSME bakeries			Role in the Bakeries		
Bacolod	9	4.0	Both	63	27.8
Balingasag	4	1.8	Manager	74	32.6
Balingoan	6	2.6	Owner	90	39.6
Cagayan de Oro	35	15.4	Total	227	100
El Salvador	7	3.1	Years in operation		
Gingoog	18	7.9	5-10	184	81.1
Iligan City	28	12.3	11-15	27	11.9
Initao	3	1.3	16-20	5	2.2
Jasaan	5	2.2	21-25	3	1.3
Kapatagan	16	7.0	26-30	6	2.6
Kauswagan	2	0.9	>30	2	0.8
Kolambugan	5	2.2	Total	227	100
Laguindingan	2	0.9	Estimated assets		
Lala	4	1.8	15,000,001-100,000,000	8	3.5
Libertad	2	0.9	3,000,000-15,000,000	81	35.7
Magsaysay	8	3.5	<3,000,000	138	60.8
Maigo	14	6.2	Total	227	100
Manticao	6	2.6	No. of employees		
Maranding	13	5.7	100-199	9	4.0
Opol	2	0.9	11-99	92	40.5
Puerto	13	5.7	<10	126	55.5
Sultan Naga Dimaporo	5	2.2	Total	227	100
Salay	3	1.3	Size of the business		
Talisayan	3	1.3	Medium	8	4.0
Tubod	4	1.8	Small	81	40.5
Villanueva	10	4.4	Micro	138	55.5
Total	227	100.0	Total	227	100

MSME: Micro, small, and medium-sized enterprise

Table 2: Model fit

Fit indices	Saturated model	Estimated model
SRMR	0.085	0.085
d_ULS	1.507	1.51
d_G	0.491	0.491
Chi-square	640.436	641.184
NFI	0.863	0.863

SRMR: Standardized root mean square residual

challenge. The demographic profile reflects a sector characterized by owner-driven decision-making, modest financial capacity, and operational limitations, conditions under which process and product innovations are particularly relevant for achieving sustainable business growth.

4.2. Structural Model Testing

Table 2 presents the structural model fit. Before advancing with data analysis, we assessed the standardized root mean square residual (SRMR) value to confirm the model's goodness of fit. According to Henseler et al. (2014), an SRMR value between 0.08 and 0.10 indicates an acceptable model fit. In this study, the SRMR value was recorded at 0.085, which was deemed satisfactory for proceeding with further analysis (Hair et al., 2014).

4.3. Measurement Model (Outer Model) Assessment

To establish the relationships between variables and derive the study's findings, the data were processed after examining the survey profiles. However, before proceeding with the analysis, it was essential to ensure that all data met the validity and reliability requirements of the measurement model. Meeting these criteria ensures an accurate assessment of the relationships between variables. The first step in evaluating PLS SEM results involves testing the outer model. The measurement model is employed to examine the relationships between indicator variables and their corresponding constructs, ensuring that the indicators used for measurement and their directional relationships with the constructs are well-defined (Palangan et al., 2025).

Table 3 presents the results of the reliability and validity tests. All values for Cronbach's alpha (CA) and composite reliability (CR) exceeded the recommended threshold of 0.7, while the average variance extracted (AVE) values were above 0.5, meeting the validity criteria outlined by (Hair et al., 2014).

Furthermore, discriminant validity was confirmed, as the AVE values for each construct were higher than the squared correlations between constructs (Abellana and Alonzo, 2025; Hair et al., 2014). Based on these results, we concluded that the data met the necessary conditions for the measurement model. After confirming the validity and reliability of the data, we proceeded with the assessment of the structural model (inner model) to analyze the relationships between variables. The results of the measurement model evaluation are detailed in Table 4.

5. DISCUSSION

5.1. Structural Model (Inner Model) Assessment

Following the confirmation of a well-fitting measurement model, the next phase involved evaluating the structural model (Hair et al., 2017) in this model, each hypothesis represents a causal

Table 3: Measurement model analysis

Variables	Indicator/ items	Factor loadings	Cronbach's alpha	Composite reliability	AVE
Process innovation	PROC1	0.952	0.981	0.982	0.929
	PROC2	0.954			
	PROC3	0.974			
	PROC4	0.968			
	PROC5	0.970			
Product innovation	PROD1	0.931	0.963	0.966	0.872
	PROD2	0.938			
	PROD3	0.931			
	PROD4	0.947			
	PROD5	0.922			
Experience	EXP1	0.755	0.852	0.861	0.630
	EXP2	0.81			
	EXP3	0.77			
	EXP4	0.743			
	EXP5	0.882			
Business growth	BG1	0.84	0.703	0.764	0.647
	BG2	0.403			
	BG3	0.859			
	BG4	0.618			
	BG5	0.591			

AVE: Average variance extracted

Table 4: Discriminant validity analysis

	Process innovation	Product innovation	Experience	Business growth
Process innovation	**0.964**			
Product innovation	0.343	**0.934**		
Experience	0.424	0.020	**0.794**	
Business growth	0.588	0.374	0.583	**0.684**

link between variables, with path coefficient analysis serving as the primary method for assessing these relationships. The strength and significance of these relationships are determined through path coefficients, which provide insights into both direct and moderating effects among the study's constructs.

As stated by Cooper and Schindler (2014), a hypothesis is considered statistically significant if the $P \leq 0.05$. Similarly, Hair et al. (2014) outline that in a two-tailed test, the commonly used critical values are 1.65 for a 10% significance level, 1.96 for a 5% significance level, and 2.57 for a 1% significance level. In this study, a hypothesis is supported if the impact of one construct on other results in a critical ratio (CR) value of ≥1.96 at a 0.05 significance level. Additionally, the statistical relevance of the coefficients is assessed using the t-value (Hair et al., 2017).

With these criteria, Table 5 presents the outcomes of the hypothesis testing offers a detailed analysis of how process innovation, product innovation, and entrepreneurial experience influence business growth.

5.2. H_1: Process Innovation has a Significant Effect on Business Growth

The results indicate that process innovation has a significant positive effect on business growth, with a path coefficient of 0.338 ($P = 0.000$, $t = 6.644$), suggesting that MSME bakeries investing in process improvements achieve higher efficiency and growth. Process innovation encompasses enhancements in production techniques, workflow optimization, and adoption of technologies to streamline operations (Felekoglu and Tasan, 2019). Prior studies show that businesses prioritizing process innovation benefit from cost reduction, increased productivity, and improved product consistency, all of which contribute to business growth (Calazans and Silva, 2016). In the bakery sector, innovations such as automation, optimized ingredient sourcing, and waste minimization can significantly enhance profitability and operational sustainability (Palangan et al., 2025). Process innovation also enables businesses to adapt to evolving consumer preferences and operational challenges. MSME bakeries that implement efficient baking techniques, ingredient preservation methods, and order management systems can accelerate production cycles and reduce costs, thereby driving growth (Piening and Salge, 2015). Given the competitive bakery landscape, process innovation is crucial for maintaining profitability and market relevance.

However, some studies report mixed outcomes. Zhao et al. (2015) note that while process innovation can improve efficiency, it does not always translate into higher profitability for small businesses due to high initial investment costs. Similarly, Roy and Islam (2017) argue that focusing solely on operational efficiency without concurrent product innovation may limit differentiation and revenue growth. Implementation challenges can further constrain benefits; Ropega (2024) cautions that poorly managed process innovation may disrupt workflows, reduce employee morale, and generate inefficiencies.

Prior studies report inconsistent effects of process innovation on firm performance, with some documenting efficiency-driven growth and others reporting neutral or negative outcomes. These contradictions can be attributed to differences in organizational scale and implementation capacity. In larger businesses, process innovation often complements existing systems and resources. In contrast, MSME bakeries operate under financial and operational constraints, where process improvements may initially increase costs or disrupt routines. The present findings suggest that process innovation contributes positively to business growth when aligned with the operational realities of small enterprises. This helps explain why prior research conducted in resource-rich contexts reports stronger effects, whereas studies focusing on micro and small businesses observe weaker or inconsistent results.

5.3. H_2: Product Innovation has a Significant Effect on Business Growth

The analysis indicates that product innovation significantly and positively impacts business growth, with a path coefficient of 0.209 ($P = 0.000$, $t = 3.864$), reinforcing its role in enhancing market competitiveness (Antoni and Karlin, 2024; Timotius, 2023). In the bakery industry, product innovation encompasses new flavors, healthier alternatives, artisanal offerings, and customized products to meet evolving consumer demands (Obiso et al., 2025). Businesses that continuously innovate their product lines benefit from increased customer loyalty, stronger brand recognition, and broader market reach. For instance, bakeries introducing gluten-free, vegan, or organic goods can attract health-conscious

Table 5: Path coefficient

Hypotheses	Path	Path coefficient	SD	t-values	P-values	Results
H_1	Process innovation -> business growth	0.338	0.051	6.644	0.000	Supported (significant)
H_2	Product innovation -> business growth	0.209	0.054	3.864	0.000	Supported (significant)
H_3	Experience×process innovation -> business growth	0.171	0.05	3.427	0.001	Supported (significant)
H_4	Experience×product innovation -> business growth	0.020	0.045	0.447	0.655	Not supported (not significant)

SD: Standard deviation

consumers and penetrate niche markets (Abellana and Alonzo, 2025; Rosenbusch et al., 2011). Product innovation also enables MSMEs to differentiate themselves through unique, high-quality products tailored to specific consumer need. In highly competitive bakery markets, continuous product innovation is necessary to maintain relevance. However, it is resource-intensive, often requiring investment in research, development, and market analysis, unlike process innovation, which primarily improves operational efficiency.

Despite its benefits, product innovation carries potential challenges. Profitability is not guaranteed if production costs exceed revenues (Youtie et al., 2018), and innovation may increase supply chain complexity and operational risks (Ambulkar et al., 2022). In traditional bakery contexts, novel products may be perceived as lower quality or less desirable by consumers with strong preferences for familiar offerings (Dettori et al., 2020). Empirical findings on product innovation remain mixed, largely due to its market-facing nature. Its success depends heavily on consumer acceptance, branding, and demand dynamics. This study confirms that product innovation enhances business growth, but its effectiveness is contingent on external market conditions, explaining the variability observed across industries and regions in prior research.

5.4. H_3: Entrepreneurial Experience has a Significant Moderating Effect on the Relationship between Process Innovation and Business Growth

Entrepreneurial experience significantly moderates the relationship between process innovation and business growth, with a path coefficient of 0.171 (P = 0.001, t = 3.427), indicating that the benefits of process innovation are amplified when implemented by experienced entrepreneurs. Seasoned entrepreneurs typically exhibit superior decision-making, deeper industry knowledge, and greater adaptability in adopting innovations (Ucbasaran et al., 2013). Their familiarity with cost-efficient production methods, supplier networks, and operational challenges allows for more effective optimization of process innovations (Laforet, 2011). Experienced owners strategically implement process improvements to align with business objectives and market demand. This includes investments in automated baking equipment, efficient inventory management systems, and sustainable production practices, resulting in enhanced productivity and growth (Jeje et al., 2021). Prior experience also enables entrepreneurs to mitigate risks associated with innovation by troubleshooting inefficiencies, adjusting production strategies, and maximizing resource utilization (Terjesen and Patel, 2017). Consequently, while process innovation inherently benefits business growth, its impact is significantly stronger under the guidance of experienced entrepreneurs.

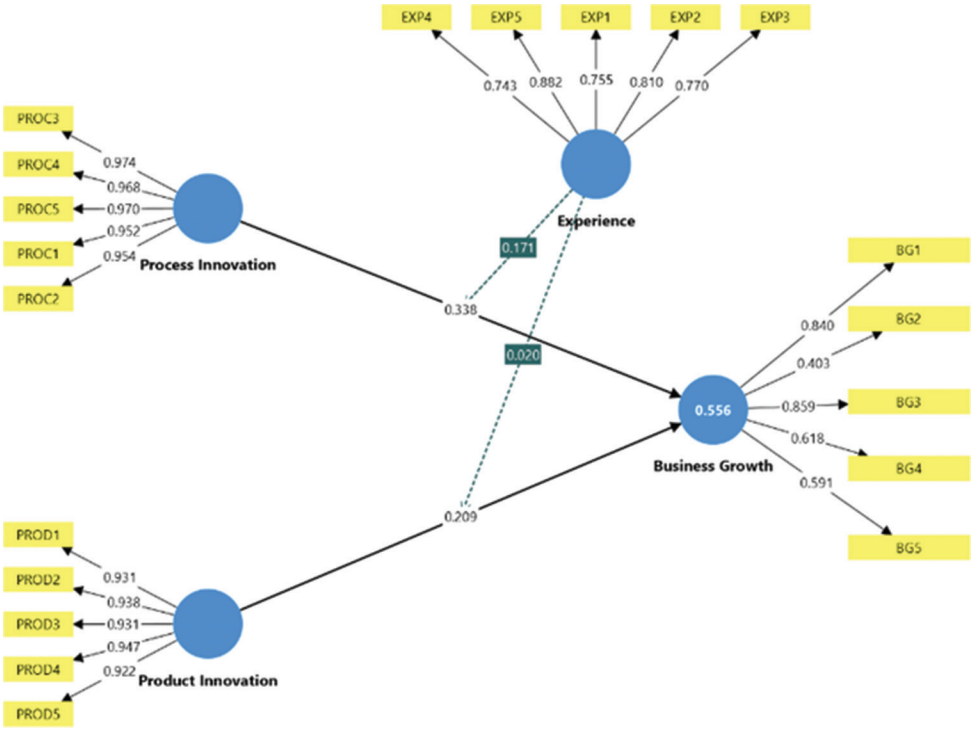
The literature presents a nuanced view of entrepreneurial experience. While it facilitates international market expansion and innovation implementation (Vaillant and Lafuente, 2019), excessive familiarity can constrain disruptive innovation, and overconfidence exhibits an inverted U-shaped effect on innovation outcome (Lahiri and Wadhwa, 2021). Such inconsistencies reflect variations in how experience is operationalized. This study confirms that entrepreneurial experience primarily enhances the effective implementation of process innovations rather than their generation. Within the S-O-R framework, experience functions as the "organism" interpreting and operationalizing innovation stimuli. Procedural knowledge, risk assessment, and industry-specific heuristics enable experienced entrepreneurs to translate process improvements into measurable business growth, reinforcing the moderating role of experience in innovation outcomes.

5.5. H_4: Entrepreneurial Experience has a Significant Moderating Effect on the Relationship between Product Innovation and Business Growth

The moderating effect of entrepreneurial experience on the relationship between product innovation and business growth was found to be not significant (path coefficient = 0.020, P = 0.655, t = 0.447), indicating that while product innovation independently drives growth, prior experience does not amplify this effect. This may be because product innovation relies heavily on external market factors such as consumer preferences, competitive positioning, and research and development capabilities rather than the entrepreneur's operational experience (Roy and Islam, 2017). Unlike process innovation, which benefits from procedural knowledge, product innovation requires specialized expertise in areas such as food science, branding, and customer engagement (Rosenbusch et al., 2011). Product innovation often depends on input from external professionals, pastry chefs, nutritionists, and marketing specialists. Launching new pastry lines or specialty products demands technical skills in recipe development, ingredient sourcing, and aesthetic presentation, which are not necessarily linked to entrepreneurial experience (Grunert et al., 2014). Success also hinges on consumer acceptance, strategic marketing, and competitive pricing (Baregheh et al., 2009). Thus, while experienced entrepreneurs may identify market opportunities, the actual growth impact of product innovation is largely determined by market responsiveness and innovation execution.

Despite mixed evidence, some studies suggest that experience can indirectly support product innovation by improving resource allocation, network leverage, and market insight (Chen and Wu, 2024; Jiao et al., 2023), or by guiding R&D investment decisions to meet consumer needs (Ropega, 2024). However, extensive

Figure 3: Structural equation modelling



experience may simultaneously reinforce established routines, limiting creative exploration.

These findings imply that, for MSME bakeries, product innovation growth outcomes are driven more by external market dynamics than by entrepreneurial tenure. Within the S-O-R framework, entrepreneurial experience appears to have a limited role in enhancing the "organism's" responsiveness to market-driven innovation stimuli, explaining the observed non-significant moderation effect.

5.6. Model Specification and Assessment Using PLS-SEM

The study utilized partial least squares structural equation modeling (PLS SEM) to evaluate the research model. Following the approach outlined by Hair et al. (2017), the analysis was conducted in two stages. The first stage involved assessing the measurement model, while the second stage focused on evaluating the structural model. Figure 3 shows the structural equation model used to test the hypothesized relationships among the study variables.

6. CONCLUSION

This study emphasizes the important role of both process and product innovation as key drivers of business growth among MSME bakeries. The findings confirm that process innovation enhances operational efficiency, streamlines workflows, reduces production costs, and leads to business growth. Businesses that adopt new technologies, refine production techniques, and improve resource utilization achieve higher productivity and long-term sustainability. Likewise, product innovation strengthens market competitiveness by improving differentiation, addressing evolving consumer preferences, and enabling businesses to adapt to shifting industry trends. The introduction of new flavors, healthier alternatives, and unique product offerings allows MSMEs to attract a broader customer base, increase brand loyalty, and capture new market segments.

Moreover, the study highlights the moderating role of entrepreneurial experience in the relationship between process innovation and business growth. Entrepreneurs with industry expertise implement process improvements more effectively, mitigate operational risks, and make informed strategic decisions that optimize business growth. Their ability to leverage knowledge, experience, and established networks increases the efficiency of innovation adoption and leads to greater business success. However, the findings indicate that entrepreneurial experience does not significantly moderate the relationship between product innovation and business growth. External market factors such as consumer demand, industry competition, and branding strategies play a more influential role in determining the success of product innovation than prior business experience. The complexities of product development, marketing, and consumer engagement require specialized expertise beyond traditional business experience and emphasize the need for collaboration with food scientists, marketing professionals, and industry experts.

This study contributes to the innovation and entrepreneurship literature by advancing theoretical understanding of how different forms of innovation drive business growth in MSMEs and how entrepreneurial experience conditions these effects. Drawing on the stimulus-organism-response (S-O-R) framework, the findings empirically demonstrate that product and process innovations function as distinct innovation stimuli whose performance outcomes are shaped differently by entrepreneurial cognition and experience. From a theoretical perspective, the study extends innovation theory by providing empirical evidence that process innovation and product innovation should not be treated as homogeneous drivers

of business growth. While both forms of innovation positively influence business growth, their mechanisms differ. Process innovation operates primarily through internal efficiency and operational control, whereas product innovation is more strongly influenced by external market dynamics. This distinction helps clarify inconsistencies in prior empirical findings that report mixed effects of innovation on MSME performance. Moreover, the study makes a novel contribution to entrepreneurship theory by clarifying the role of entrepreneurial experience as a contingent, rather than universal, moderator of innovation outcomes. The results show that entrepreneurial experience strengthens the relationship between process innovation and business growth but does not significantly moderate the effect of product innovation. This finding challenges the common assumption that experience uniformly enhances all forms of innovation performance and suggests that experience is more valuable for execution-oriented innovations than for market-facing, creativity-driven innovations.

Future studies may extend this research by examining the role of digital transformation and innovation capabilities in shaping MSME performance. In particular, research may explore how digital tools, Industry 4.0 technologies, and data-driven decision-making interact with entrepreneurial experience to influence innovation outcomes. Comparative studies across regions and industries, as well as longitudinal designs, would further enhance understanding of how innovation dynamics evolve over time in resource-constrained contexts.

7. PRACTICAL AND POLICY IMPLICATIONS

The findings offer clear practical guidance for MSME bakeries, particularly in resource-constrained settings such as Mindanao provinces. Process innovation emerged as a key driver of business growth, suggesting that bakery owners should prioritize incremental operational improvements with favorable cost-benefit outcomes. These include partial automation of mixing, baking, or proofing processes; standardized production workflows; and improved inventory and waste management systems. Even modest investments in energy-efficient ovens, semi-automated equipment, or digital point-of-sale and inventory tracking tools can enhance productivity, reduce operating costs, and improve product consistency. Product innovation should remain demand-driven rather than novelty-focused, with bakeries aligning new offerings to local consumer preferences, health trends, and affordability. The results further indicate that entrepreneurial experience strengthens the effective implementation of process improvements, underscoring the importance of continuous skills development, peer mentoring, and operational training for bakery owners.

From a policy perspective, the study provides evidence-based insights relevant to Philippine MSME support frameworks. The Department of Trade and Industry (DTI) and the MSMED Council can strengthen innovation outcomes by prioritizing support for process-oriented and digital innovations in traditional industries such as bakeries. Programs such as Shared Service Facilities (SSFs) and Negosyo Centers may be further leveraged to provide access to bakery-specific equipment, digital tools, and operational training that enhance Industry 4.0 readiness at a manageable scale. Policy initiatives should also differentiate between innovation types by emphasizing operational efficiency, digital process management, and experiential learning for process innovation, while supporting market re-search, product testing, and branding assistance for product innovation. By adopting a sector-sensitive and regionally inclusive approach, MSME policies can more effectively promote sustainable, innovation-driven growth in the Philippine bakery industry.

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