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# Digital Innovation and Organizational Competitiveness of SMEs in Abia State, Nigeria

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***ABSTRACT:*** *This study investigates the influence of digital innovation on the organizational competitiveness of SMEs in Abia State, Nigeria. Using a descriptive survey design, data were collected from 257 SME managers across Aba and Umuahia through structured questionnaires. The research examines how digital tools such as e-commerce platforms, cloud computing, and data analytics contribute to product development, operational efficiency, and market expansion. Findings reveal a significant positive correlation between the adoption of digital innovations and improved competitive performance metrics, including customer satisfaction, agility, and profitability. The study underscores the critical role of digital literacy, infrastructural support, and policy incentives in accelerating digital transformation among SMEs. It concludes by recommending consistently investing in R&D and customer-centric product design, leveraging local insights to develop differentiated products will not only justify premium pricing but also reduce cost per unit through economies of scale.*

***Keywords****: Digital Innovation, Organizational Competitiveness, Product Innovation, Process innovation, Cost Competitiveness, Speed/responsiveness Competitiveness, SMEs*

## 1.0 Introduction

In the contemporary business environment, digital innovation has emerged as a transformative force, reshaping how organizations operate, compete, and deliver value. For Small and Medium Enterprises (SMEs), especially in developing economies like Nigeria, digital innovation is not merely a technological upgrade—it is a strategic imperative for survival and growth (Gupta & Sharma, 2020; Nambisan et al., 2017). Digital innovation encompasses the integration of digital technologies into product development, process optimization, and business models to enhance efficiency, responsiveness, and market competitiveness. Abia State, Nigeria, is renowned for its vibrant SME ecosystem, particularly in cities like Aba, which serve as industrial and commercial hubs.

Despite the proliferation of digital tools, many SMEs in the region continue to face challenges in leveraging innovation for competitive advantage. Organizational competitiveness, defined as a firm's ability to sustain superior performance through cost efficiency and responsiveness (D'Aveni, 1994), is increasingly influenced by the adoption of digital innovation strategies. Product and process innovations—two key dimensions of digital innovation—have been identified as critical drivers of competitiveness. Product innovation involves the development of new or significantly improved goods and services, while process innovation focuses on enhancing internal operations to reduce costs and improve responsiveness (Chesbrough, 2003; OECD, 2015). Understanding how these innovations affect cost competitiveness and speed/responsiveness competitiveness is essential for SMEs seeking to thrive in a dynamic market.

### Statement of the Problem

Despite the growing awareness of digital innovation's potential, SMEs in Abia State often struggle to translate innovation into tangible competitive outcomes. While some firms have adopted product and process innovations, the extent to which these innovations influence cost efficiency and responsiveness remains underexplored. Existing studies have largely focused on broader national contexts, leaving a gap in localized empirical evidence specific to Abia State (Agu, 2023; Omede & Aghanenu, 2021). This lack of contextual research limits the ability of business owners, policymakers, and development agencies to design targeted interventions that support SME competitiveness. Moreover, the absence of robust data on the relationship between digital innovation and organizational competitiveness in Abia State hinders strategic decision-making and resource allocation. Addressing this gap is crucial for fostering innovation-driven growth among SMEs in the region.

### Research Objectives

The specific objectives of this study are to:

i. Examine the relationship between product innovation and cost competitiveness of SMEs in Abia State, Nigeria.

ii. investigate the relationship between product innovation and speed/responsiveness competitiveness of SMEs in Abia State, Nigeria.
iii. Ascertain the relationship between process innovation and cost competitiveness of SMEs in Abia State, Nigeria.
iv. Determine the relationship between process innovation and speed/responsiveness competitiveness SMEs in Abia State, Nigeria.

**Research Questions**

The following research questions guide this study;

i. What is the relationship between product innovation and cost competitiveness of SMEs in Abia State, Nigeria?
ii. How does product innovation relate to speed/responsiveness competitiveness of SMEs in Abia State, Nigeria?
iii. What is the nature of the relationship between process innovation and cost competitiveness of SMEs in Abia State, Nigeria?
iv. How does process innovation relate to speed/responsiveness competitiveness of SMEs in Abia State, Nigeria?

**Research Hypotheses**

The following null hypotheses are proposed:

$Ho_1$: There is no significant relationship between product innovation and cost competitiveness of SMEs in Abia State, Nigeria.

$Ho_2$: There is no significant relationship between product innovation and speed/responsiveness competitiveness of SMEs in Abia State, Nigeria.

$Ho_3$: There is no significant relationship between process innovation and cost competitiveness of SMEs in Abia State, Nigeria.

$Ho_4$: There is no significant relationship between process innovation and speed/responsiveness competitiveness of SMEs in Abia State, Nigeria.

## 2.0 Review of Literature

This study is anchored on the Dynamic Capabilities Theory developed by Teece, Pisano, and Shuen (1997). The theory posits that firms must develop, integrate, and reconfigure internal and external competencies to respond to rapidly changing environments. In the context of SMEs, dynamic capabilities such as product and process innovation enable firms to adapt to market shifts, reduce costs, and improve responsiveness (Teece, 2007). Dynamic capabilities are the firm's ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments (Teece et al., 1997). This theory is particularly relevant for SMEs in Abia State, where agility and innovation are essential for survival and competitiveness.

**Conceptual Framework**

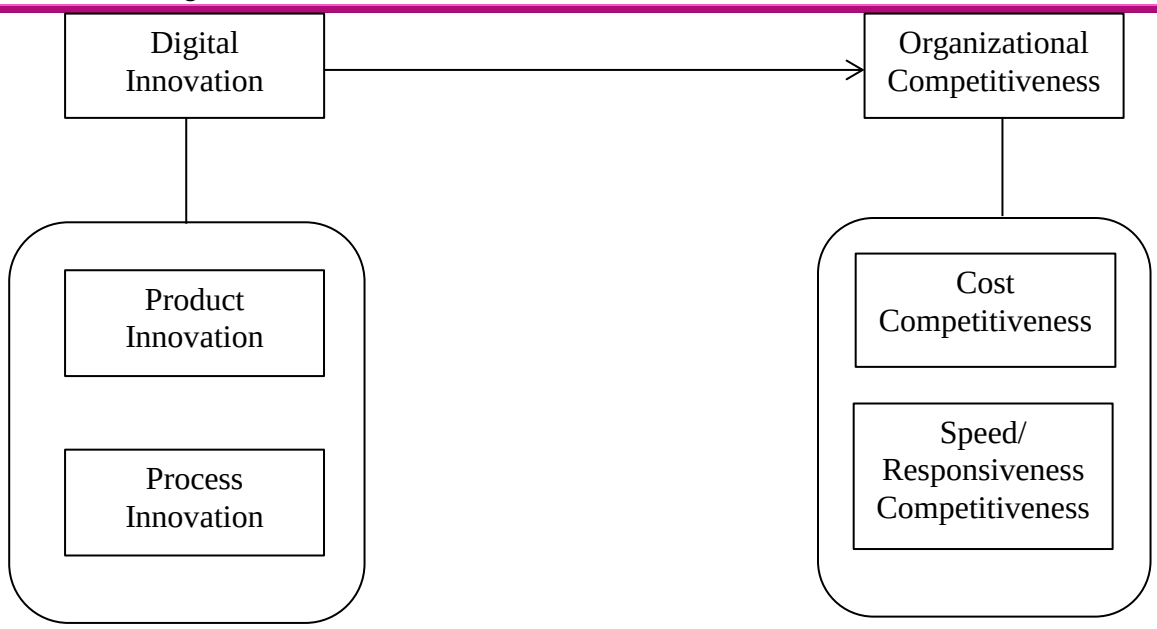


**Figure 1: Conceptual Model**
Source: The dimensions of Digital Innovation were adapted from Nambisan, Lyytinen, Majchrzak and Song (2017), while the measures of Organizational Competitiveness were adapted from D'Aveni (1994)

**Digital Innovation**

Digital innovation refers to the application of digital technologies—such as cloud computing, artificial intelligence (AI), big data, and the Internet of Things (IoT)—to develop new business models, processes, products, or services that enhance organizational performance and competitiveness. It is not merely the adoption of technology, but the transformation of how value is created and delivered within an organization (Nambisan et al., 2017). In SMEs, digital innovation plays a pivotal role in enabling firms to react rapidly to changing customer preferences, enter new markets, and optimize internal operations despite resource constraints.

In the Nigerian SME context, digital innovation has become increasingly relevant due to the proliferation of mobile technology, increasing internet penetration, and the rise of digital payment solutions (Unegbu et al., 2024). Firms that integrate digital innovation into their core strategies often outperform their peers in customer service, cost efficiency, and scalability. According to Baita and Adhama (2020), SMEs that invest in digital innovation experience better market visibility and long-term sustainability in competitive sectors.

**Product Innovation**

Product innovation involves the development or significant enhancement of goods and services with the aim of improving customer satisfaction, market positioning, and operational effectiveness. It may entail the introduction of entirely new products or modifications to existing ones that offer better performance, usability, or functionality (OECD, 2015). SMEs leverage product innovation to differentiate themselves and create value-added offerings that align with consumer trends and preferences.

Agu (2023) highlights that in Abia State, product innovation is a strategic tool for SME survival and growth. SMEs that develop improved or locally adapted products tend to attract support from both government and private sector initiatives, which can lower production costs and increase visibility. Furthermore, product innovation is associated with increased customer retention, especially when firms tailor their offerings to niche markets.

**Process Innovation**

Process innovation refers to the implementation of new or significantly improved production or service delivery methods aimed at enhancing efficiency, reducing costs, and improving quality. It includes innovations in techniques, equipment, and software solutions

that support internal workflow optimization (Chesbrough, 2003). For SMEs, process innovation is particularly important because it enables them to do more with fewer resources while remaining competitive.

According to Unegbu et al. (2024), SMEs in Nigeria that adopted digital tools for inventory management, accounting, and customer relationship management (CRM) experienced significant gains in operational efficiency. Process innovation also supports business agility by enabling rapid adaptation to regulatory changes and market demands. Baita and Adhama (2020) assert that SMEs in service sectors benefit notably from process innovations that reduce time-to-market and enhance customer satisfaction.

**Organizational Competitiveness**

Organizational competitiveness is the firm's ability to maintain a favorable market position relative to its peers through strategic capabilities such as innovation, responsiveness, cost control, and customer orientation (D'Aveni, 1994). It reflects an organization's success in achieving superior value delivery, adaptability, and sustained growth in challenging environments.

In SMEs, competitiveness is influenced by both internal capacities (e.g., innovation capability and managerial expertise) and external factors (e.g., market trends and regulatory frameworks). Nambisan et al. (2017) argue that digital innovation strengthens competitiveness by enhancing responsiveness and enabling data-driven decision-making. For SMEs in Abia State, competitiveness is tied to the ability to manage cost structures effectively and respond quickly to changing customer expectations (Gupta & Sharma, 2020).

**Cost Competitiveness**

Cost competitiveness refers to a firm's ability to produce goods or deliver services more efficiently than its competitors, thus enabling it to offer lower prices or generate higher margins. This is achieved through strategies such as process innovation, automation, economies of scale, and supply chain optimization (Gupta & Sharma, 2020).

In Nigeria, cost competitiveness is a decisive factor for SME sustainability, especially in markets sensitive to price fluctuations. Unegbu et al. (2024) report that SMEs in Abia State that adopted digital accounting systems and lean production methods achieved notable reductions in operational costs. Efficient use of digital technologies—such as mobile billing and digital logistics—further supports cost competitiveness in resource-constrained environments.

**Speed/Responsiveness Competitiveness**

Speed/responsiveness competitiveness reflects an organization's ability to react swiftly to customer needs, market shifts, and environmental changes. In the SME sector, responsiveness is linked to business agility and the capacity to maintain customer satisfaction despite fluctuating conditions (Kim & Park, 2021). Digital tools such as real-time analytics, cloud-based communication, and AI-driven customer service have transformed responsiveness across industries. Omede and Aghanenu (2021) found that SMEs in Aba that implemented digital CRM systems and e-commerce platforms experienced improvements in responsiveness and customer retention. Responsiveness competitiveness allows firms to adjust quickly to trends and outperform rivals in dynamic markets.

**Empirical Review**

Agu (2023) explored the relationship between product innovation and SME survival in Abia State and found that innovative firms reduced their production costs by leveraging local resources and digital design tools. The study concluded that product innovation positively affects cost competitiveness through improved input efficiency and increased access to funding opportunities.

Omede and Aghanenu (2021) investigated innovation practices among SMEs in Aba and reported that product innovation significantly improved customer responsiveness. Innovative SMEs were better equipped to customize offerings and deliver products faster, resulting in higher customer satisfaction and retention rates.

Unegbu et al. (2024) examined the effects of digital transformation on SME operations in Nigeria and concluded that process innovation—specifically through automation and system integration—led to substantial reductions in labor and administrative costs. SMEs that implemented process innovations improved their cost competitiveness significantly in manufacturing and retail sectors.

Baita and Adhama (2020) developed a framework assessing innovation and SME performance in Nigeria. Their study found that process innovation positively influenced responsiveness by streamlining operations and reducing order cycle times. Service-oriented SMEs that adopted digital scheduling and workflow tools responded more effectively to customer requests.

## 3.0 Methodology

This study adopts a quantitative research design, specifically utilizing a cross-sectional survey approach to examine the relationship between digital innovation (product and process innovation) and organizational competitiveness (cost competitiveness and responsiveness competitiveness) among SMEs in Abia State, Nigeria. The population of the study comprises owners and managers of registered Small and Medium Enterprises (SMEs) across various sectors—manufacturing, retail, agriculture, and services—in Abia State. To determine the sample size, the study employed the Krejcie and Morgan (1970) sampling table. Given that the estimated number of registered SMEs in Abia State is approximately 1,200 (based on SMEDAN reports), the recommended sample size at a 95% confidence level is 291 respondents. To ensure proportional representation, stratified random sampling was used to select respondents across urban clusters such as Aba and Umuahia. This approach accounts for geographical and sectoral diversity among SMEs and enhances the generalizability of findings.

Data was collected using a structured questionnaire designed to capture relevant constructs. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) via SmartPLS version 4.0 software. PLS-SEM is appropriate for this study due to its ability to handle complex models with multiple latent constructs and relatively small sample sizes (Hair et al., 2021).

Where; Digital Innovation = DIN, Product Innovation = PDN, Process Innovation = PCN, Organizational Competitiveness = OCS, Cost Competitiveness = CCS, Speed/Responsiveness Competitiveness = SRC

**Table 1: Reliability Test**

| Construct | Cronbach's Alpha |
|---|---|
| Product Innovation | 0.842 |
| Process Innovation | 0.814 |
| Cost Competitiveness | 0.802 |
| Speed/Responsiveness Competitiveness | 0.826 |

All Cronbach's Alpha values exceed the recommended threshold of 0.70, indicating strong internal consistency and construct reliability.

**Table 2: Validity Test**

| Construct | AVE | CCS | PDN | PRN | SRC |
|---|---|---|---|---|---|
| **CCS** | 0.651 | **0.807** | | | |
| **PDN** | 0.638 | 0.312 | **0.799** | | |
| **PRN** | 0.614 | 0.294 | 0.287 | **0.785** | |
| **SRC** | 0.645 | 0.305 | 0.323 | 0.478 | **0.803** |

All Average Variance Extracted (AVE) values are above 0.50, confirming convergent validity. Diagonal values (in bold) are higher than inter-construct correlations, confirming discriminant validity using the Fornell-Larcker Criterion (Fornell & Larcker, 1981).

## 4.0 Analysis and Discussion

Out of the 291 structured questionnaires distributed to SME managers in Abia State, 257 were retrieved. This high return rate strengthens the reliability of the statistical analysis and reflects active engagement from respondents.

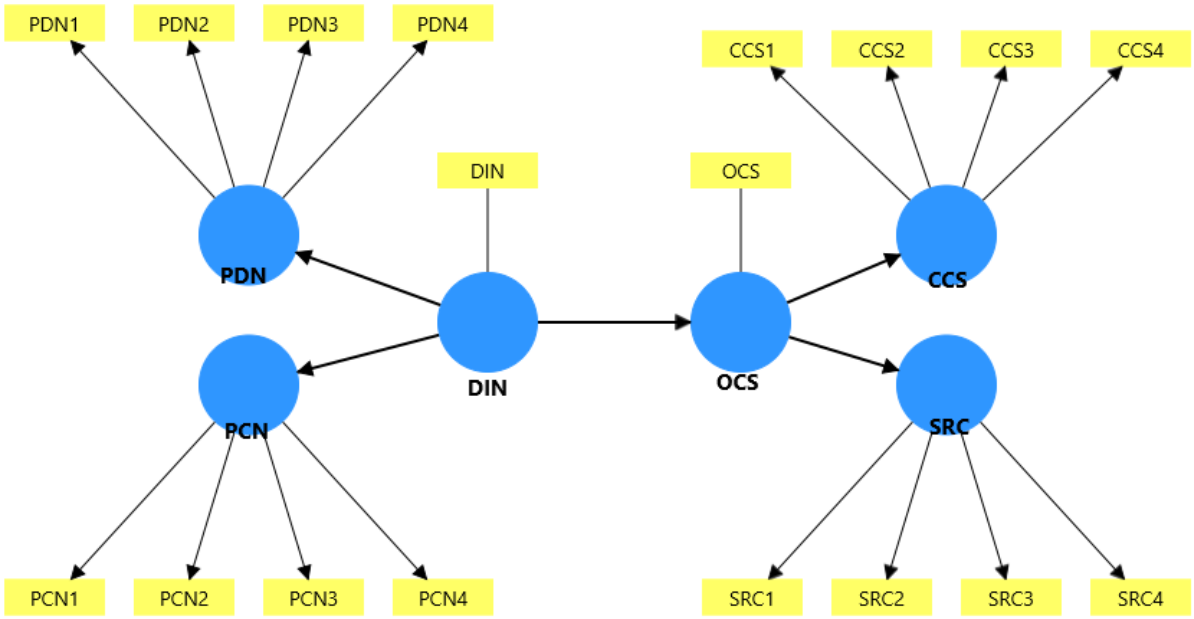


**Figure 2: Research Model**

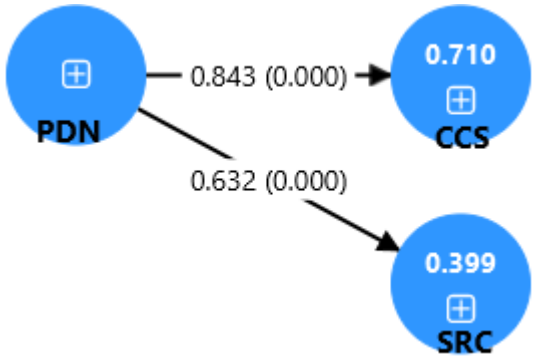


**Figure 3: Hypotheses 1 and 2**

Figure 3 illustrates the direct relationships between Product Innovation (PDN) and two dimensions of Organizational Competitiveness (OCS):

PDN → Cost Competitiveness (CCS) The path coefficient value of 0.843 with a p-value of 0.000 indicates a strong and statistically significant positive relationship between product innovation and cost competitiveness. This means that SMEs in Abia State that actively pursue product innovation—such as developing new products or enhancing existing ones—tend to experience greater cost efficiency. The $R^2$ value for CCS is 0.710, indicating that product innovation explains 71% of the variance in cost competitiveness. This leads to the rejection of $Ho_1$, confirming that product innovation does significantly impact cost competitiveness. The result echos the findings of Agu (2023), which show that innovation in product offerings enables SMEs to reduce unit costs through differentiation and value-added features. This supports the notion that innovating in products contributes directly to competitive cost positioning.

PDN → Speed/Responsiveness Competitiveness (SRC) The path coefficient of 0.632, also with a p-value of 0.000, signifies a moderate to strong, statistically significant relationship between product innovation and responsiveness competitiveness. SMEs that innovate in their product lines respond more swiftly to market demands, customer preferences, and competitive pressure. The $R^2$ value for SRC is 0.399, suggesting that product innovation accounts for approximately 39.9% of the variability in responsiveness. Hence, $Ho_2$ is also rejected, validating that product innovation positively influences how quickly and effectively SMEs can react to

changes. This is consistent with empirical studies by Omede and Aghanenu (2021), which emphasize how unique product offerings streamline operational agility and responsiveness.

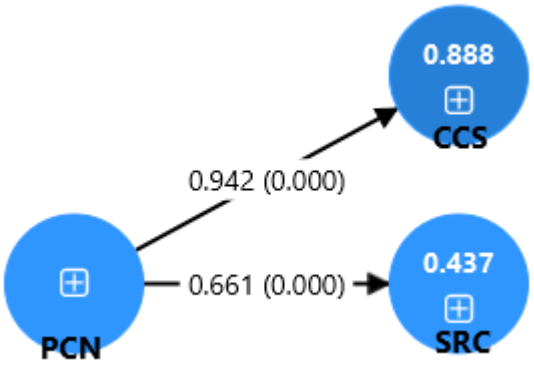


**Figure 4: Hypotheses 3 and 4**

Figure 4 focuses on the influence of Process Innovation (PCN) on two key performance indicators for SMEs:

PCN → Cost Competitiveness (CCS): Path coefficient = 0.942; P-value = 0.000; and $R^2$ = 0.888. The path coefficient is exceptionally high, and the p-value shows strong statistical significance. This means process innovation has a very strong positive impact on cost competitiveness. With an $R^2$ value of 88.8%, the model explains nearly all of the variation in SMEs' cost efficiency through process innovation—like automation, improved workflows, or waste reduction. $Ho_3$ is rejected, confirming process innovation significantly boosts cost competitiveness. This supports literature by Unegbu et al. (2024), suggesting SMEs that continually refine processes tend to benefit from reduced overheads and improved resource allocation.

PCN → Speed/Responsiveness Competitiveness (SRC): Path coefficient = 0.661; P-value = 0.000; and $R^2$ = 0.437. The relationship between process innovation and speed/responsiveness competitiveness is also strong and statistically significant. With a 66.1% path coefficient, it means better processes (e.g., lean operations, agile production) help SMEs respond faster to customers and market changes. The $R^2$ value of 43.7% reflects a solid level of explanatory power. $Ho_4$ is rejected, showing process innovation significantly enhances responsiveness. It aligns with empirical reviews that champion operational innovation as a critical enabler of dynamic capability (Baita & Adhama, 2020).

## 5.0 Conclusion and Recommendations

This study investigated the role of digital innovation—specifically product innovation and process innovation—in enhancing the cost competitiveness and speed/responsiveness competitiveness of Small and Medium Enterprises (SMEs) in Abia State, Nigeria. Through rigorous quantitative analysis using PLS-SEM and data gathered from 257 valid SME respondents, the results demonstrate strong positive and statistically significant relationships across all constructs. Each of the four hypotheses was supported, confirming that innovation capability is a central driver of competitiveness in today's dynamic business landscape.

The findings highlight that product innovation enables SMEs in Abia State to reduce costs by developing differentiated offerings tailored to customer needs, thereby leveraging economies of scale and attracting market attention. SMEs that prioritize product development and customization achieve better input efficiency and resource utilization, helping them remain profitable even amid pricing pressures. Likewise, product innovation positively influences responsiveness competitiveness, equipping SMEs with tools to react faster to market changes and consumer preferences. Innovative product designs, modular features, and customer feedback integration allow businesses to deliver timely solutions, boosting agility and customer loyalty.

Process innovation, on the other hand, contributes significantly to cost competitiveness by streamlining operations, eliminating redundancies, and minimizing resource waste. SMEs in Abia State that embrace digital workflows, inventory management systems, and lean production techniques reduce overheads and improve profitability. Finally, process innovation enhances speed/responsiveness competitiveness, allowing SMEs to adapt more quickly to disruptions and evolving market conditions.

Investments in digital infrastructure, employee training, and workflow automation enable faster service delivery, greater flexibility, and improved customer service outcomes.

Taken together, the results underscore that digital innovation is not an optional upgrade—it is a strategic necessity for SME sustainability and performance. In an environment characterized by competition, technological change, and economic volatility, SMEs in Abia State must adopt innovation-driven models to maintain relevance and resilience. This study contributes to the growing body of knowledge on SME competitiveness in developing economies, offering empirical evidence from a state-specific perspective. It also lays the groundwork for future research and policy interventions aimed at building innovation capacity within Nigeria's entrepreneurial ecosystem. It is therefore recommended that:

i. SMEs should consistently invest in R&D and customer-centric product design. Leveraging local insights to develop differentiated products will not only justify premium pricing but also reduce cost per unit through economies of scale.
ii. Businesses should utilize agile product development cycles and integrate feedback mechanisms to shorten time-to-market. Building modular products enables faster adaptation to changing market needs.
iii. Automating routine processes and adopting lean production techniques will reduce operational waste and enhance resource efficiency. SMEs should also explore digital tools for inventory and supply chain management.
iv. SMEs should embrace technologies that optimize workflow speed, such as cloud-based platforms, CRM tools, and mobile order processing systems. Rapid internal coordination translates to faster external delivery.

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