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Digital Resilience Strategies in Coping with Seasonal Food Price Fluctuations: A Case Study of The Culinary Sector in Bali

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Abstract

Seasonal fluctuations in food prices are one of the challenges that can affect the sustainability of micro, small, and medium-sized enterprises (MSMEs) in the culinary sector. Changes in raw material prices can increase production costs and affect business owners' ability to maintain profit margins. This situation encourages MSME owners to make various business adjustments, including the utilization of digital technology. This study aims to analyze the patterns of seasonal food price fluctuations experienced by culinary MSMEs in Bali, identify their impacts on operational activities and business sustainability, and examine the operational adaptation strategies and digital resilience implemented by business owners. This study employs a qualitative approach using a case study method. The research informants consisted of five owners or managers of culinary MSMEs selected through purposive sampling. Data were collected through interviews, observations, and documentation. The data were analyzed using the interactive model developed by Miles, Huberman, and Saldaña, which consists of data condensation, data display, and conclusion drawing and verification. The findings indicate that changes in food prices place pressure on production costs and profit margins of culinary MSMEs. In response to these conditions, business owners implement various adjustments, including controlling raw material usage, managing inventory, seeking alternative suppliers, adjusting menus or portion sizes, and implementing adaptive pricing strategies. The utilization of digital technologies, such as WhatsApp Business, Instagram, TikTok, food delivery platforms, and financial record-keeping applications, also supports marketing activities, consumer communication, and business management. The findings further indicate that the implementation of digital resilience can help culinary MSMEs adapt to changing business environments, particularly when facing seasonal fluctuations in food prices. The utilization of digital capabilities and strategies also supports business owners in maintaining business continuity amid changing market conditions.

Keywords:
Digital Resilience; Culinary MSMEs; Food Price Fluctuations; Adaptation Strategies; Bali.

1. INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) play an important role in Indonesia's economy, as their presence supports community economic activities, creates employment opportunities, and promotes the development of various business sectors. One of the sectors experiencing significant growth is the culinary industry. In Bali Province, the growth of culinary businesses is closely associated with tourism activities and the creative economy, both of which are essential components of the regional economy. The presence of domestic and international tourists generates demand for a wide range of food and beverage products. This situation provides opportunities for culinary MSMEs to expand their markets while also intensifying competition among business owners in retaining customers and maintaining business sustainability.

Despite these opportunities, culinary MSMEs face various conditions that may hinder their operational activities. Limited capital, suboptimal financial management, and changes in the business environment are among the challenges that business owners must address. One external pressure that significantly affects culinary businesses is seasonal fluctuations in food prices. Commodities such as chili peppers, shallots, eggs, chicken meat, cooking oil, and vegetables may experience price fluctuations due to various factors, including weather conditions, supply availability, food distribution, changes in demand, and increased consumption during religious holidays and vacation periods.

In the culinary sector, fluctuations in food prices are among the factors that can affect the continuity of MSME operational activities. Limited capital in micro-scale businesses means that raw material purchases must be adjusted according to production requirements and available financial resources. When raw material prices increase, production expenditures also rise, potentially reducing profit margins. However, adjustments to selling prices cannot always be implemented immediately because business owners must consider consumers' purchasing power and the possibility of changes in consumer behavior. If product prices remain unchanged while production costs continue to increase, the net income generated by the business may decline. Therefore, these conditions encourage MSME owners to implement various adaptation strategies, such as readjusting inventory levels, evaluating supplier options, modifying the use or composition of raw materials, and reconsidering pricing policies based on prevailing cost and market conditions.

The ability of business owners to cope with such pressures and changes is closely related to business resilience. Resilience refers to the ability of a business to respond to disruptions, adjust its strategies, and maintain the continuity of its business activities under uncertain conditions. In culinary MSMEs, this ability can be demonstrated through various adaptive measures, including improving raw material efficiency, adjusting menus and portion sizes, managing inventory, seeking alternative suppliers, and evaluating selling prices. These strategies are necessary to prevent changes in raw material costs from directly disrupting business continuity.

Amid changing business conditions, the utilization of digital technology can serve as a means of supporting MSMEs in adapting their business activities. Various digital tools and platforms, such as social media, WhatsApp Business, food delivery services, and financial applications, can be utilized according to the operational needs of individual businesses. Social media and communication applications enable business owners to disseminate product information, offer promotional programs, and maintain customer relationships without being limited to direct interactions. On the other hand, the use of applications for managing transactions and recording financial conditions can provide more systematic information, allowing business owners to establish a clearer basis for conducting evaluations and making decisions. The utilization of these technologies demonstrates that digital capabilities are not limited to marketing activities but can also become an integral part of how MSMEs respond to changes in the business environment. In this study, digital resilience refers to the ability of MSME owners to utilize digital technology to support adaptation processes, respond to various challenges, and maintain the sustainability of their business activities.

Although research on MSME resilience, digital transformation, inventory management, and business adaptation strategies has continued to develop, studies specifically examining the relationship between operational adaptation strategies and digital resilience in addressing seasonal food price fluctuations among culinary MSMEs in Bali remain limited and require further exploration. Previous studies have predominantly examined these aspects separately, leaving room for a deeper understanding of how culinary MSME owners utilize operational strategies alongside digital technology to respond to changes in food prices. This issue is particularly important to investigate, considering Bali's characteristics as a region with high tourism activity, which may influence demand dynamics and competition within the culinary sector.

Based on these conditions, this study focuses on digital resilience strategies in addressing seasonal food price fluctuations in the culinary sector in Bali. Specifically, this study aims to identify: (1) the patterns of seasonal food price fluctuations experienced by culinary MSMEs in Bali; (2) the impacts of these price changes on operational activities and business sustainability; and (3) the operational adaptation strategies and utilization of digital technology implemented by MSME owners in responding to these conditions. The findings of this study are expected to provide an understanding of how the combination of operational strategies and digital technology utilization can strengthen the ability of culinary MSMEs to cope with uncertainty in food prices and maintain business sustainability.

Micro, Small, and Medium Enterprises (MSMEs) are an essential component of economic activity due to their ability to conduct business operations with relatively limited resources while directly serving market needs. One of the prominent sectors run by MSMEs is the culinary sector. The characteristics of culinary businesses—which are directly related to consumption needs—make the availability of raw materials, production costs, demand fluctuations, and the ability to retain customers critical aspects of business continuity. In running their business activities, culinary MSMEs face operational conditions that are relatively more limited compared to larger-scale companies. Capital availability is a key consideration in determining the volume of raw materials purchased, often leading to short-term procurement based immediate production needs. This procurement pattern can create difficulties when raw material prices fluctuate, as incurred costs can change in a relatively short period. Furthermore, dependence on specific suppliers and suboptimal cost management can increase risks to business stability. Therefore, inventory level management, supplier selection,

and purchasing plan formulation need attention as part of MSMEs' efforts to control costs and mitigate the impact of raw material price volatility. In the context of Bali, the characteristics of the culinary sector are also intertwined with tourism activities. Changes in visitor numbers, visit patterns, and business competition can influence the decisions of MSME owners in managing their business activities. Consequently, the ability of culinary MSMEs to manage raw materials and respond to market changes forms an important part of business survival.2.2 Seasonal Food Price FluctuationsPrice changes in food commodities can occur dynamically, driven by conditions in supply processes and market demand levels. The magnitude of these changes varies across commodities, as certain food items are more sensitive to seasonal factors, production outcomes, distribution efficiency, and shifts in consumer demand. In the context of food in Indonesia, price variations in several major commodities warrant close attention as they relate to various aspects of the supply chain—from production and distribution to market mechanisms. These conditions indicate that price dynamics are not merely about changes in a commodity's selling value, but also reflect shifts in supply and demand conditions that can affect business operators. Food price fluctuation refers to the changing prices of food commodities over time resulting from shifts in either supply or demand. Specific food commodities exhibit higher price volatility due to seasonality, production conditions, distribution factors, and changing consumer needs. Research on food prices in Indonesia indicates that several staple commodities experience significant price shifts, which can be linked to production efficiency, distribution, and market structures. Within the culinary sector, food price fluctuations have direct consequences because raw materials constitute the core of the production process. When raw material costs rise, business owners must determine appropriate responses to prevent cost increases from disrupting business continuity. Potential alternatives include adjusting purchase volumes, seeking alternative suppliers, modifying menu compositions, controlling raw material usage, or adjusting selling prices. Price fluctuations do not necessarily impact every MSME in the same way. The magnitude of the impact is influenced by the types of products sold, dependence on specific ingredients, working capital capacity, supplier relationships, and the business owner's inventory management capabilities. Thus, food price fluctuations should be understood not merely as cost variations, but as external conditions demanding adaptability from MSME operators.2.3 Business ResilienceBusiness resilience can be understood as the capacity of an organization or business operator to respond to various pressures encountered during business operations. This capability is reflected in how business owners handle disruptions, make adjustments when environmental conditions change, and maintain ongoing business activities. Consequently, resilience does not simply denote the ability of a business to survive during a crisis, but also encompasses readiness to alter strategies and adjust business management in response to an evolving business environment. In the context of MSMEs, resilience is crucial because business owners generally face resource constraints compared to large-scale enterprises. These limitations make rapid and flexible decision-making a vital aspect of navigating uncertainty. Resilience is manifested through the ability to implement changes in operational strategies, marketing, resource management, or business models. Studies on digital transformation and MSME resilience indicate that digitalization can serve as a factor supporting resilience, particularly when MSMEs face crises and changing business environments. However, digitalization should not be viewed merely as the use of technology, but rather as a transformation in how businesses operate and create value.Based on this understanding, this study views resilience as the capacity of culinary MSMEs to face food price fluctuations by adjusting operational processes and optimizing the utilization of technology and digital resources to support business continuity.2.4 Digital ResilienceDigital resilience refers to a business's capacity to leverage digital technology to sustain operations, respond to disruptions, and adapt to changing business environments. This concept is closely linked to digital transformation, as technology can be utilized to strengthen a business's capability to acquire information, communicate, conduct marketing, manage transactions, and make decisions. Digital transformation for MSMEs is not limited to the use of social media or e-commerce platforms. Such shifts can encompass how businesses market products, interact with consumers, manage transactions, and improve operational efficiency. Literature reviews show that digital transformation can provide benefits through enhanced operational efficiency, expanded market access, and strengthened innovation capabilities for MSMEs.In this study, digital resilience is understood as the ability of MSME operators to integrate digital technology into their response to environmental changes and uncertainties. Thus, technology adoption relates not only to skills in operating devices or applications, but also to the ability to select and apply technology according to business needs. Various digital platforms—such as WhatsApp Business, Instagram, TikTok, food delivery services, and financial recording apps—can be utilized to maintain customer communication, increase marketing reach, manage transactions, and provide information supporting decision-making. This utilization demonstrates that digital technology can become an integrated component of business management when MSMEs face changing market conditions, including the rise or instability of raw material prices. Therefore, digital resilience in this research refers to the ability of MSME operators to select, utilize, adapt, and integrate digital technology into business activities as part of an adaptation strategy against seasonal food price fluctuations.2.5 Operational Adaptation StrategiesOperational adaptation strategies represent a series of actions taken by business owners to align their business activities with changing environmental conditions. For culinary MSMEs, these strategies can relate to raw material procurement, inventory management, supplier relations, production processes, menu planning, portion sizing, and pricing. When food prices rise, business owners can exercise efficiency in raw material usage to keep production costs under control. Another option is

to seek alternative suppliers so the business is not overly dependent on a single source of supply. Menu adjustments can also be made if specific ingredients experience substantial price hikes. Such strategies allow MSMEs to continue operations without fully passing increased costs onto consumers.Research on raw material cost risk management in culinary MSMEs indicates that strengthening inventory control and purchase planning can serve as strategies to enhance efficiency and financial resilience amid cost uncertainties.Thus, operational adaptation strategies play a vital role in building MSME resilience by enabling business owners to respond to price changes without halting business operations.2.6 Digitalization as an Enabler of MSME ContinuityThe adoption of digital technology opens up opportunities for MSMEs to make adjustments across various business activities. Social media, for instance, can be utilized as a medium to introduce products while maintaining customer interaction. Meanwhile, digital-based food delivery services enable products to reach a broader customer base beyond walk-in patrons. Digital technology can also be applied in financial management through transaction recording apps, providing business owners with more systematic data regarding transaction flows and financial health. Systematic reviews on digital transformation in MSMEs show that technology adoption has the potential to contribute to business performance development. This contribution is visible through simplified operational processes, wider market access, and emerging opportunities for innovation. Nevertheless, successful technology implementation depends on conditions inherent to each MSME, such as human resource readiness, digital technology proficiency levels, infrastructure availability, and business characteristics. Based on these conditions, digital technology cannot be viewed as a standalone solution to all problems faced by MSMEs. The positive impact of digitalization heavily relies on the alignment between technology and business needs/capabilities, alongside how technology is combined with effective business management. Grounded in this perspective, this study positions digital technology utilization as an element intertwined with MSME operational adaptation strategies in responding to seasonal food price fluctuations.2.7 The Interrelationship Between Food Price Fluctuations, Adaptation Strategies, and Digital ResilienceSeasonal food price fluctuations can exert pressure on culinary MSMEs through increased production costs and altered profit margins. This pressure prompts business owners to make adjustments to their operations. Forms of adjustment may include switching suppliers, exercising inventory control, optimizing raw material usage, modifying menus, and evaluating selling prices. Simultaneously, digital technology can support this adaptation process. Technology provides tools for business owners to maintain customer communication, expand marketing reach, manage transactions, and gather information required for decision-making. Therefore, operational strategies and digital technology utilization can complement each other in building MSMEs' capacity to face changes.Research on MSME resilience and digital transformation indicates that digitalization is linked to enhanced capabilities in navigating crisis conditions, yet further study is needed regarding the specific mechanisms and digital utilization forms best suited to particular business characteristics.2.8 Previous Studies and Research GapPrevious studies indicate several relevant research groupings. First, research on food price fluctuations largely discusses price shifts from the perspectives of supply, demand, distribution, and purchasing power. Second, studies on culinary MSMEs predominantly focus on raw material cost management, inventory, and business survival strategies. Third, research on digital transformation and MSME resilience demonstrates that digital technology can help improve adaptability and business continuity. However, building upon these reviews, a gap remains regarding how operational adaptation strategies and digital technology utilization are deployed concurrently by culinary MSMEs when confronting seasonal food price fluctuations. Furthermore, digital transformation studies often center on its impact on general performance, competitiveness, or overall business survival, whereas the specific link between digital utilization and MSME responses to raw material cost volatility remains underexplored. Grounded in this research gap, this study focuses on the digital resilience strategies of culinary MSMEs in facing seasonal food price fluctuations in Bali. This focus allows the research not only to view technology as a marketing tool, but also to understand how technology is deployed alongside operational strategies to help business owners navigate cost pressures and sustain business continuity.

2. RESEARCH METHOD

2.1. Approach and Research Design

This study employs a qualitative approach with a case study design. This approach is utilized to gain an in-depth understanding of the digital resilience strategies implemented by culinary Micro, Small, and Medium Enterprises (MSMEs) in facing seasonal food price fluctuations in the Province of Bali. The qualitative approach allows researchers to explore business operators' experiences, perspectives, actions, and decision-making processes based on the conditions they encounter in running their business activities.

The case study design is utilized because the research focuses on a specific phenomenon within real-life business contexts. Through this design, the study aims to understand the forms of food price changes experienced by MSME operators, their impacts on operational activities, the adjustments made, and the utilization of digital technology as part of efforts to sustain business continuity.

2.2. Research Location and Focus

This study was conducted on a number of culinary MSMEs located in the Province of Bali. The selection of the research location was based on the alignment between business characteristics and the core issues under investigation. The research was carried out throughout the year 2026.

The research focus is directed toward four main scopes. First, to identify seasonal food price variations. Second, to examine the consequences of these price changes on production costs, raw material procurement processes, selling price determinations, and business operational activities. Third, to identify the forms of strategies implemented by business operators to adjust operational activities. Fourth, to examine the utilization of digital technology as part of business resilience, particularly in supporting marketing activities, communication, transactions, and decision-making processes.

2.3. Research Informants

Informants in this study were selected using purposive sampling. This technique was applied by considering the relevance of prospective informants' experiences and knowledge to the research objectives. Informants are individuals directly involved in the management of culinary MSMEs, thereby possessing experience regarding food price changes and technology adoption in business activities.

To maintain the alignment between informant characteristics and research requirements, several criteria were established:

a. Being the owner or the person responsible for managing a culinary MSME;
b. Having operated the business for at least two years;
c. Possessing experience in facing food price changes influenced by seasonal conditions; and
d. Utilizing digital technology in carrying out a portion of their business activities.
e. Referring to these criteria, this study involved five culinary MSME owners as primary informants.

2.4. Types and Sources of Data

This study utilizes two categories of data: primary data and secondary data. Primary data were obtained directly from informants through in-depth interviews, observation of business activities, and document collection. These data were used to explore MSME operators' experiences when facing food price changes, the resulting consequences on business operations, the adjustments made, and how digital technology is utilized to navigate these conditions.

Meanwhile, secondary data serve as supporting material to strengthen the research discussion. Sources of secondary data include scholarly articles, books, government agency reports, business-related documents, and various relevant literature. This literature covers discussions on MSMEs, business resilience, digital transformation, business management, and food price fluctuations.

2.5. Data Collection Techniques

Data collection was conducted by combining three methods: interviews, observation, and documentation. The use of these three techniques ensures that the information obtained provides a more comprehensive depiction of business conditions.

2.5.1. Interviews

Interviews employed a semi-structured pattern, providing the researcher with a guideline of questions as well as the flexibility to develop inquiries based on informant responses. The interviews were directed at obtaining information regarding business operators' experiences when raw material prices change, the impact on costs and business activities, raw material sourcing methods, menu and selling price adjustments, and the utilization of digital technology in business operations.

2.5.2. Observation

Observation was carried out by directly monitoring activities related to MSME operations. Observations covered raw material procurement and utilization processes, marketing activities, and the use of digital media and technology in business operations. Information gathered through observation served to complement the interview data.

2.5.3. Documentation

Documentation was used to supplement research data through the collection of various evidence related to MSME activities. Documentation included photographs of business activities, menus, transaction records, evidence of digital media or platform usage, and other documents relevant to the research focus.

2.6. Research Instruments

In a qualitative approach, the researcher acts as the primary instrument due to direct involvement in determining the focus of observation, acquiring data, processing information, conducting analysis, and interpreting research findings. This role enables the researcher to adapt data collection processes to conditions encountered during the study.

To support this process, several supplementary instruments were used, consisting of interview guidelines, observation sheets, voice recorders, documentation tools, and field notes. These supporting instruments helped maintain the completeness and organization of the data obtained throughout the research.

2.7. Data Analysis Techniques

Research data were analyzed using the interactive analysis model developed by Miles, Huberman, and Saldaña. The analysis process was conducted through three main stages: data condensation, data display, and conclusion drawing/verification.

2.7.1. Data Condensation

At this stage, data obtained through interviews, observation, and documentation were selected and simplified according to research needs. Subsequently, relevant information was coded and categorized into themes related to food price fluctuations, their impacts on operational activities, adaptation strategies, and digital technology utilization.

2.7.2. Data Display

The data that underwent condensation were then structured so that relationships between findings could be observed more clearly. Display was performed in the form of descriptive narratives, tables, or thematic matrices. This stage assisted the researcher in discovering patterns, similarities, and differences in the experiences shared by each informant.

2.7.3. Conclusion Drawing and Verification

Conclusions were formulated based on patterns, linkages, and findings emerging during the analysis process. Verification was conducted continuously by reviewing interview data, observations, and documentation. This step ensured that the resulting interpretations and conclusions remained grounded in conditions discovered in the field.

2.8. Data Validity

Data validity was tested through source triangulation, technique triangulation, and time triangulation. Source triangulation was conducted by comparing information obtained from all five informants to observe consistencies or discrepancies in the provided data.

Technique triangulation was performed by cross-checking interview findings with observational data and documentary evidence. Meanwhile, time triangulation involved checking information at different points in time to verify data consistency. The use of these three triangulation methods aimed to enhance data credibility and strengthen the foundation for drawing research findings.

2.9. Focus of Research Analysis

This study does not utilize variable relationships as in quantitative research. The focus of analysis is directed toward describing the adaptation process of culinary MSMEs when confronting seasonal food price fluctuations.

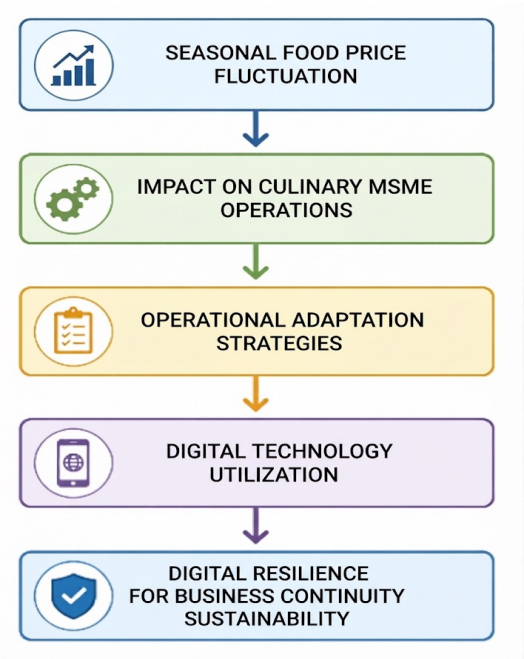

Figure 1. Research Method

The number of informants, criteria, research period, and data collection location need to be cross-checked with field data and interview transcripts before the final manuscript is compiled.

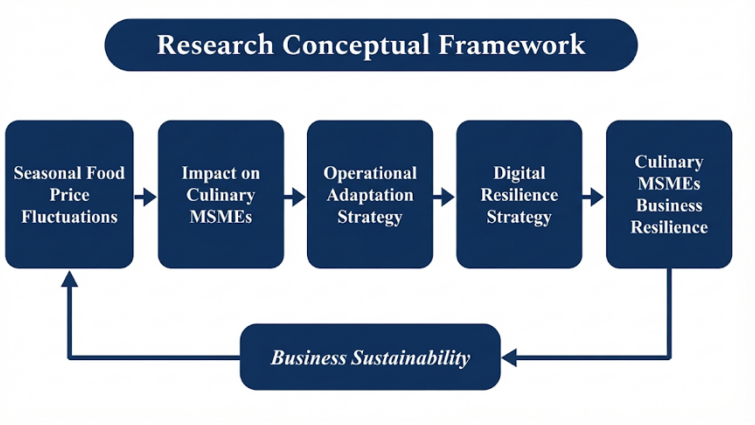

Figure 2. Research Conceptual Framework

The research conceptual framework provides a systematic depiction of the researcher's train of thought in explaining the linkage between the phenomena under study and the concepts used as the basis for analysis. In qualitative research, the conceptual framework is not intended to test statistical relationships between variables, but rather serves as a guide for understanding phenomena, directing the data collection process, and assisting the researcher in conducting analysis and drawing conclusions.

This study stems from the phenomenon of seasonal food price fluctuations, which frequently occur due to seasonal shifts, distribution disruptions, weather conditions, or market demand dynamics. These conditions have a direct impact on the operations of culinary sector MSMEs, particularly through increased production costs, instability in the cost of goods sold, reduced profit margins, and disrupted raw material availability. If not managed properly, these conditions can hinder business continuity and diminish the competitiveness of MSMEs.

To face these conditions, MSME operators implement various operational adaptation strategies, such as supplier diversification, raw material inventory control, raw material substitution when necessary, and gradual product selling price adjustments. These strategies represent an initial response by business operators to minimize the impact of price fluctuations on operational activities. In addition to operational adaptation strategies, this study focuses on digital resilience strategies as an effort to enhance MSMEs' capability to navigate changes in the business environment. Digital resilience strategies are manifested through the utilization of digital technology, such as social media (Instagram, TikTok, and Facebook) for promotional tools, WhatsApp Business as a communication medium with customers, online food delivery platforms (GoFood and GrabFood), digital financial recording applications, and the use of price information via digital media. The utilization of such technology is expected to improve operational efficiency, expand market reach, accelerate decision-making, and strengthen MSMEs' adaptability to food price changes. The concept of digital resilience emphasizes an organization's capacity to continuously adapt, recover, and maintain performance when facing disruptions or environmental changes.

Through the implementation of operational adaptation strategies supported by digital resilience, it is expected that culinary sector MSMEs can build business resilience, characterized by an enhanced ability to adapt to price changes, efficient business management, maintained service quality, and business sustainability. Therefore, the conceptual framework of this study illustrates the flow where seasonal food price fluctuations serve as the primary phenomenon affecting MSME operations, which are then addressed through operational adaptation strategies and digital resilience strategies, ultimately resulting in business resilience and sustainability as the final objective of the study.

3. RESULTS AND DISCUSSION

3.1. Results

3.1.1. Forms of Seasonal Food Price Fluctuations

All informants emphasized that the prices of horticultural commodities (chilies, onions) and proteins (chicken, eggs) experience significant surges during the rainy season and major religious holidays.

Table 1. Seasonal Food Price Fluctuations

Informant Code	Significant Statement	Data Code	Category	Thema
I1	Chili prices double during the rainy season and religious holidays	FH-01	Chili Price Increase	Price fluctuations of horticultural commodities
I2	Raw material purchases must be reduced due to increased capital requirements	FH-02	Capital Constraints	Impact of price increases on material procurement
I3	Raw material purchases must be reduced due to increased capital requirements	FH-03	Price Uncertainty	Raw material purchases must be reduced due to increased capital requirements
I4	Chicken, egg, and cooking oil prices increase ahead of religious holidays	FH-04	Seasonal Price Increase	Influence of religious holidays
I5	Vegetables experience price increases during the rainy season	FH-05	Vegetable Price Increase	Seasonal influence on supply

3.1.2. Impact of Food Price Fluctuations on MSME Operations

Sudden increases in raw material costs that are not offset by higher selling prices trigger a decline in profit margins (profit squeeze).

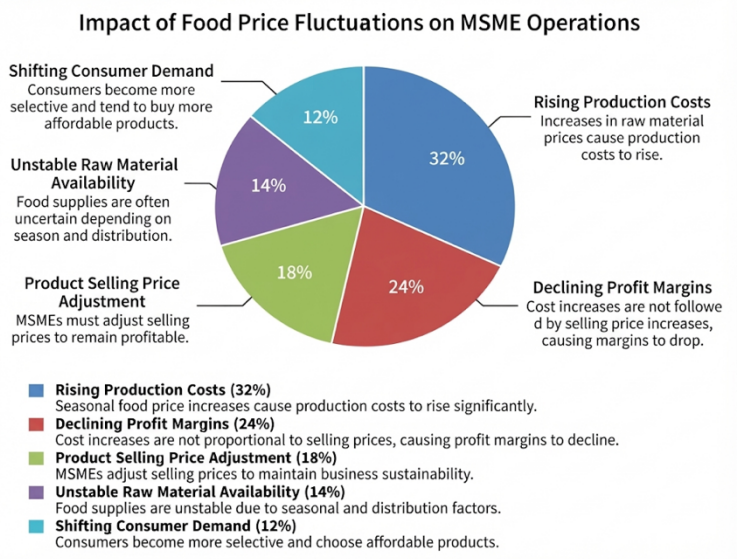

Figure 3. the impact of food price fluctuations on MSME operations

Table 2. Impact of Food Price Fluctuations on Operations

Informant Code	Significant Statement	Data Code	Category	Theme
I1	Business profits decrease because raw material prices increase	DF-01	Profit Decline	Financial Impact
I2	Production costs increase, but selling prices are not raised immediately	DF-02	Production Cost Increase	Financial Impact
I3	Production volume is reduced to save business capital	DF-03	Production Efficiency	Operational Adjustment
I4	Selling prices are raised gradually so that customers stay	DF-04	Selling Price Adjustment	Adaptation Strategy
I5	Looking for new suppliers to get cheaper raw material prices	DF-05	Supplier Diversification	Adaptation Strategy

3.1.3. MSME Digital Resilience Strategy

Informants utilize digital channels to mitigate operational risks and price fluctuations: 1) Comparing prices between suppliers via WhatsApp Business groups. 2) Marketing value meal packages/promos via Instagram and TikTok to maintain sales volume. 3) Utilizing food delivery platforms (GoFood/GrabFood) to

reach a broader external market segment. 4) Using digital cashier/financial recording applications to monitor the Cost of Goods Sold (COGS) in real-time.

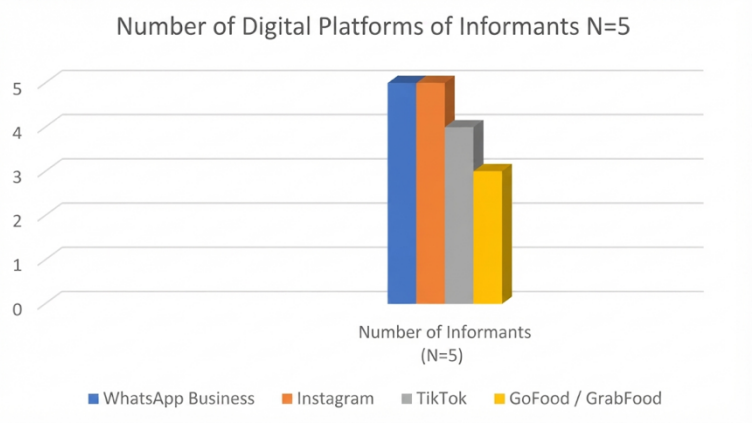

Figure 4. Number of Digital Platforms Used by Informants (N=5)

3.1.4. The Role of Digitalization in Enhancing Resilience

Based on interviews with five informants, digitalization plays an important role in enhancing the resilience of culinary MSMEs in dealing with seasonal fluctuations in food prices. All informants utilize digital technology to support business operations, expand marketing activities, and maintain relationships with suppliers and customers. The most widely used digital platforms include WhatsApp Business, Instagram, TikTok, and food delivery services such as GoFood and GrabFood.

All five informants (100%) use WhatsApp Business as their primary communication platform with suppliers and customers. This platform is utilized to obtain information regarding the availability and price changes of raw materials, place orders, and receive customer orders more efficiently. Such ease of communication enables MSME owners to make responsive decisions when fluctuations in food prices occur.

Instagram is another digital channel utilized by all five informants for business marketing activities. Its use involves displaying various product-related information, such as menu photos and videos, promotional announcements, and interactive content that encourages communication with customers. According to the informants, Instagram helps businesses introduce their products to a wider consumer base while maintaining customer interest at relatively affordable marketing costs.

In addition to Instagram, TikTok is used by four out of five informants (80%) as a platform for introducing products through video content. The content includes food preparation processes, menu presentation, and information about newly introduced products. The use of video content on TikTok enables products to reach a more diverse audience, thereby creating opportunities to attract new customers.

Meanwhile, three informants (60%) have adopted GoFood and GrabFood as online sales channels. These platforms enable MSMEs to expand their market reach, improve customer accessibility, and maintain sales stability when the number of direct customer visits decreases.

Overall, the research findings indicate that the utilization of digital platforms contributes positively to the adaptive capacity of culinary MSMEs. Digitalization not only supports marketing activities but also accelerates access to information, improves communication efficiency with suppliers and customers, expands market reach, and helps maintain business continuity amid seasonal fluctuations in food prices. These findings demonstrate that digital resilience functions as a supporting mechanism for operational adaptation strategies rather than as a substitute for cost control and raw material management strategies.

3.1.5. Synthesis of Research Findings

Table 3. Synthesis of Research Findings

Main Theme	Subtheme	Research Findings	Informants
Food Price Fluctuations	Increases in the prices of chilies, onions, cooking oil, chicken, and eggs	Price increases are driven by the rainy season, religious holidays, and Bali's holiday seasons	I1-I5
Operational Impacts	Increased cost of goods sold (COGS), declining profits, and portion adjustments	Profit margin pressures encourage the implementation of daily cost-efficiency measures.	I1-I5
Adaptation Strategies	Supplier diversification, menu adjustments, and inventory control	Operational adaptation is implemented flexibly without compromising core product quality.	I1-I5

Digital Resilience	Utilization of WhatsApp, Instagram, TikTok, GoFood, and cashier applications	Utilization of WhatsApp, Instagram, TikTok, GoFood, and cashier applications	I1-I5
Business Sustainability	Stable sales, customer loyalty, and operational efficiency	The synergy between operational adaptation and digital tools supports business continuity.	I1-I5

3.2. Discussion

The research findings indicate that food price fluctuations constitute recurring disruptions that affect the operational activities of culinary MSMEs in Bali. Increases in the prices of chilies, onions, eggs, chicken, cooking oil, and vegetables raise the cost of goods sold (COGS) and reduce profit margins when selling prices cannot be adjusted immediately. These findings are consistent with Hadi and Khairawati (2020), who emphasize raw material management as an important aspect of production cost efficiency. In the context of this study, these impacts encourage MSME owners to implement portion adjustments, ingredient substitution, inventory control, supplier diversification, and gradual selling price increases.

From the perspective of digital resilience, the findings demonstrate that the utilization of technology helps MSME owners respond more quickly to changing business conditions. WhatsApp Business is used to obtain information regarding raw material prices and availability while facilitating communication with suppliers. In terms of marketing, Instagram and TikTok are used to introduce and promote products to consumers, while GoFood and GrabFood serve as alternative sales channels. These findings are consistent with Azhari et al. (2025) and Arifin and Arseto (2025), who discuss the contribution of innovation and digital marketing to enhancing MSME competitiveness. The findings are also in line with Saputra et al. (2025), who demonstrate that the use of digital technology is associated with businesses' ability to cope with changes and disruptions. Meanwhile, Aisyianita et al. (2024) indicate that the implementation of digital transformation can help business owners expand their market reach while creating opportunities for innovation.

Based on these findings, this study identifies a relationship between operational management and the utilization of digital technology in responding to changes in food prices. Operational adjustments serve to control the consequences of rising costs, while digital technology provides support in obtaining information, conducting promotional activities, expanding sales access, and maintaining communication with business stakeholders. These two aspects complement each other in developing MSMEs' adaptive capacity to changing market conditions.

This study also offers a different perspective from several previous studies, which tend to examine digitalization, business resilience, inventory management, and MSME adaptation strategies separately. This research integrates these aspects into a unified discussion focusing on culinary MSMEs in Bali and their responses to seasonal food price fluctuations. Bali's context as a tourism destination also represents an important factor in understanding the business dynamics examined in this study. Accordingly, digital resilience in this research refers to the ability of business owners to utilize digital technology as a supporting instrument to accelerate responses to changing operational conditions, particularly when disruptions related to food prices occur. Ultimately, such utilization can help MSMEs maintain their business activities and support operational sustainability.

4. CONCLUSION

This study concludes that seasonal fluctuations in food prices in Bali Province represent a recurring structural challenge, particularly for essential commodities such as chilies, shallots, garlic, cooking oil, eggs, chicken meat, and fresh vegetables. Price volatility is primarily driven by a combination of weather conditions during the rainy season, increased consumption during major religious celebrations such as Galungan, Kuningan, and Eid al-Fitr, as well as changing demand during the peak tourism season. These conditions directly affect the cost of goods sold (COGS) and create profit margin pressures, as some MSME owners choose to maintain their selling prices to preserve customer loyalty.

To address these challenges, culinary MSMEs integrate daily operational adaptation strategies with the implementation of digital resilience. From an operational perspective, business owners implement supplier diversification, efficient product portion adjustments through menu engineering, daily inventory management, and gradual selling price adjustments. On the other hand, the adoption of digital technologies through WhatsApp Business, Instagram, TikTok, food delivery platforms, and financial recording applications helps accelerate access to raw material price information, expand marketing reach, and maintain sales volume stability. Therefore, the synergy between operational adaptive capabilities and digital resilience serves as an important mechanism for maintaining the stability and sustainability of culinary MSMEs amid market price uncertainty.

The limitation of this study lies in its relatively small number of informants, consisting of only five culinary MSME owners, and its qualitative research approach. Consequently, the findings are not intended to be statistically generalized. Future research may expand the number of informants, compare several tourism

destination regions, and combine interviews with food price statistical data and quantitative surveys to examine the relationship between digital technology adoption, financial literacy, profitability, and business performance.

Based on the research findings, culinary MSME owners are encouraged to improve their digital literacy, particularly in utilizing digital financial applications to monitor COGS and cash flow regularly. Business owners are also advised to diversify their suppliers, develop alternative ingredients that maintain product quality, and establish collective purchasing groups to strengthen their bargaining power in raw material procurement.

For local governments and relevant agencies, this study highlights the importance of strengthening the efficiency of regional food supply chains to reduce price volatility in essential commodities across Bali. It also emphasizes the need to provide digital transformation training based on risk management for micro-scale MSMEs.

For future researchers, it is recommended that the geographical scope and number of informants be expanded and that food price data and quantitative approaches be incorporated to complement qualitative findings.

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