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The Effect of the Global Supply Chain Crisis on the Price of Local Agricultural Products in Indonesia: Business Continuity Strategies for MSME Actors

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ABSTRACT

Global supply chain crises have pressured food price stability in developing countries, including Indonesia, affecting local agricultural product prices and agricultural MSME sustainability. This study analyzes the global supply chain crisis's influence on local agricultural product prices in Indonesia, identifies main transmission channels, and formulates business continuity plan (BCP) strategies for agricultural MSMEs. Using a mixed-method approach, the research analyzes food commodity price data (2022-2024) and conducts semi-structured interviews with 20 agricultural MSMEs across West Java, Central Java, and South Sulawesi. Data analysis employed descriptive statistics and thematic analysis. Findings show domestic rice prices increased over 16% with logistics costs rising 30%. Most MSMEs (72%) reported increased input costs, while key adaptations included supplier diversification, stock reserves, and digital adoption. MSMEs implementing dual strategies reduced supply disruption risks by 30%. This research strengthens food supply chain resilience literature and provides practical recommendations for MSMEs and public policies supporting price stability and food security.

INTRODUCTION

Global supply chains, particularly in the food sector, have become increasingly vulnerable in the last decade due to the layered impacts of pandemics, geopolitical conflicts, and climate anomalies. The shock caused logistical disruptions, transportation barriers, and a surge in the price of basic commodities, which were most felt by developing countries. Recent literature confirms that the main sources of disruptions in the food supply chain include climatic and biological factors, infrastructure and logistical constraints, and input supply volatility. This condition demands a stronger resilience and adaptation strategy in the entire food distribution chain (Rojas-Reyes, 2024; Zhao et al., 2024; Huang et al., 2025).

The Russia-Ukraine war since 2022 has exacerbated this condition by triggering a surge in wheat and fertilizer prices in the global market. As one of the world's main suppliers, the disruption of Ukrainian and Russian exports is quickly contagious to international markets, putting inflationary pressure on food-importing countries. Various studies confirm that this geopolitical crisis is

accelerating food price instability in many developing countries, including Indonesia, which is facing rising consumption and production costs due to dependence on imports (Kuhla et al., 2024; Countryman et al., 2025; Chepeliev et al., 2025).

In addition to geopolitical factors, the 2023-2024 El Niño climate phenomenon reduced rainfall in Southeast Asia, including Indonesia, resulting in decreased rice yields and tightened domestic supplies. These climate shocks exacerbate food inflation and prompted the government to carry out emergency rice imports to maintain stability. Data shows that rice prices in Indonesia will increase by more than 16% on an annual basis in early 2024, while rice imports in March 2024 will jump by more than 900% compared to the previous year (Widyawati, 2025; Yudha et al., 2023; Rozaki, 2021).

Indonesia's context is particularly vulnerable because rice remains a politically and socially sensitive strategic commodity. The surge in rice prices has prompted the government to expand the distribution of subsidized rice through BULOG and increase the import quota. However, this step actually reveals structural weaknesses in the domestic supply chain. The phenomenon of long queues for subsidized rice and high dependence on imports shows that distribution and supply governance is still weak. On the other hand, the depreciation of the rupiah in 2024 will also increase the cost of food imports and agricultural inputs, thereby increasing inflationary pressures (Reuters, 2024; Shobur, 2025; MarketWatch, 2024).

This dynamic presents serious challenges for micro, small, and medium enterprises (MSMEs) in the agriculture and food distribution sectors. As the backbone of the national food economy, MSMEs face the risk of supply delays, increased operational costs, and disruptions in meeting market demand. This problem is increasingly felt in rural-based MSMEs who are still lagging behind in the use of digital technology and logistics innovation, thereby widening the digital gap in building supply chain resilience (Lestari et al., 2024; Nature et al., 2025; Sembiring, 2024).

The urgency of this research includes at least three important aspects. First, from a macroeconomic perspective, rising food prices weaken the purchasing power of vulnerable households and increase the risk of poverty, while the transmission of global shocks to local prices is accelerating (Kuhla et al., 2024; Countryman et al., 2025; Zhou, 2023). Second, in terms of national food governance, various studies show that the logistics of staples in Indonesia are still slow and fragmented, as seen during the pandemic, so a more adaptive institutional design is needed (Yudha et al., 2023; Akbar, 2025; Rozaki, 2021). Third, in terms of business sustainability, MSMEs need adaptive strategies that are able to ensure business continuity in the midst of recurring crises, including supplier diversification, digital adoption, and a more proactive risk management system (Sahoo, 2025; Yunus et al., 2025; Utami et al., 2021).

The relevance of this study addresses the paradox in Indonesia where official data show sufficient rice production, yet price volatility and repeated import spikes indicate supply-demand management mismatches affecting consumer and MSME price stability. The theoretical framework on food supply chain resilience emphasizes the importance of information visibility, collaboration, and redundancy as a driver of stability, but these principles have not been

fully operationalized in the context of MSMEs in Indonesia (Safii, 2025; Yudha et al., 2023; Zhao et al., 2024; Huang et al., 2025).

Although research on supply chain resilience is growing, there are clear research gaps. To date, few studies have specifically integrated global shocks---geopolitics, climate, and exchange rate fluctuations---into the design of business continuity plans (BCPs) aimed specifically at Indonesian agricultural MSMEs. Existing research tends to focus on the general resilience framework or on macroeconomic aspects, without directly touching the operational reality of MSMEs (Zhao et al., 2024; Huang et al., 2025; Lestari et al., 2024).

The novelty of this study lies in the proposed BCP framework designed for agricultural MSMEs through the perspective of price stability. The framework not only maps how global shocks are transmitted into MSMEs' cost structures and goods flows, but also combines early warning mechanisms---such as stock monitoring, weather anomalies, and import policies---with operational strategies such as supplier diversification, flexible contracts, and buffer inventory management. Thus, this study seeks to bridge the gap between supply chain resilience theory and the practical needs of MSMEs in Indonesia (Zhao et al., 2024; Huang et al., 2025; Sahoo, 2025).

In line with that, the objectives of this study are: first, to analyze the influence of the global supply chain crisis on the price formation of local agricultural products in Indonesia in the period 2023-2025; second, identify key transmission channels---such as logistics costs, supply constraints, exchange rate fluctuations, and public policies---that affect MSMEs; and third, designing and evaluating business continuity strategies that can be adopted by MSMEs to reduce price volatility and maintain operational sustainability amid global uncertainty (Zhao et al., 2024; Huang et al., 2025).

RESEARCH METHOD

Types of Research

This research uses a qualitative approach with multiple case study designs combined with descriptive-quantitative analysis. A qualitative approach was used to explore in depth the experience of agricultural MSMEs in dealing with the global supply chain crisis, while quantitative analysis was used to assess the trend of changes in local agricultural commodity prices in Indonesia in the 2023–2025 period. Thus, this research is mixed-method with the aim of producing a comprehensive understanding of the influence of global shocks on price stability and business continuity strategies.

The population and population sample

in this study are all MSME actors in the agricultural and agribusiness sectors in Indonesia who are affected by the global supply chain crisis, especially those engaged in rice, horticulture, and other staple food commodities. The research sample was determined by purposive sampling technique, namely selecting MSMEs that: (1) have been operating for at least three years, (2) have experienced the direct impact of increased input prices or distribution disruptions after 2022, and (3) are located in areas that represent production and distribution centers (e.g., West Java, Central Java, and South Sulawesi). The target sample number is 15-20 MSMEs, with variations in the scale of small to medium enterprises to get a representative picture.

Research Instruments

The main instruments of this research are: (1) Semi-structured interview guidelines, which focus on the experiences of MSME actors in dealing with rising input prices, supply management strategies, and business adaptation. (2) The Likert scale questionnaire is to measure the level of readiness of MSMEs in implementing the business continuity plan (BCP) strategy, which includes risk management indicators, supplier diversification, digital technology adoption, and reserve management. The questionnaire was validated through expert judgment by three academics in supply chain management and piloted with five MSMEs to ensure clarity and relevance. Interview triangulation was conducted by cross-verifying responses with secondary documentation. (3) Secondary documentation, in the form of agricultural commodity price data from the Central Statistics Agency (BPS), the Ministry of Agriculture, Bank Indonesia, as well as reliable media reports on food price fluctuations during the research period.

Data Collection Techniques

Data is collected through three main techniques: (1) In-depth interviews with owners or managers of agricultural MSMEs to obtain narrative information about the impact of the supply chain crisis. (2) The distribution of questionnaires in person and online to measure the perception and strategy of MSMEs. (3) A documentary study on official reports on food prices, inflation, and government policies. All participants provided informed consent, and confidentiality was maintained through anonymization of respondent identities in data reporting.

Research Procedure

The research is carried out through the following stages:

1. Preparation stage: formulating research instruments, identifying MSME samples, and taking care of research permits.
2. Data collection stage: conducting interviews, distributing questionnaires, and collecting secondary data from relevant agencies.
3. Data processing stage: transcribing interview results, coding qualitative data, and compiling commodity price databases.
4. Analysis stage: integrating qualitative and quantitative findings to generate relevant impact patterns and strategies.
5. Reporting stage: compiling research results in the form of scientific articles for publication.

Data Analysis

Techniques Data analysis is carried out with a thematic analysis approach for qualitative data and descriptive-statistical analysis for quantitative data. Thematic analysis was used to identify the main themes related to MSME resilience strategies, while descriptive analysis was conducted to describe the price trends of agricultural commodities during the research period. In addition, a comparative analysis was used between MSME strategies that succeeded in maintaining business

stability and those that experienced significant disruptions, to formulate applicable business continuity plan recommendations .

RESULTS AND DISCUSSION

Trend of Increasing Prices of Local Agricultural Products After the Global Crisis

Quantitative data analysis shows a significant increase in the prices of rice, chili, and shallots during the 2023–2024 period. BPS data noted that premium rice prices jumped by more than 16% in February 2024, while rice imports in March 2024 increased by 921% compared to the previous year. This price spike is in line with international findings regarding the transmission of global food prices to domestic markets in developing countries (Kuhla et al., 2024; Widyawati, 2025; Zhao et al., 2024). Table 1 below shows the trend of changes in rice prices in Indonesia compared to international prices of wheat and rice, which are both affected by the Ukraine war and the El Niño phenomenon.

Table 1. Rice and Wheat Price Comparison (2022–2024)

Year	Domestic Rice Price (Rp/kg)	World Rice Price (USD/ton)	World Wheat Price (USD/ton)
2022	11.800	420	270
2023	12.600	470	310
2024	14.650	560	340

Source: BPS (2024), FAO (2024), World Bank (2024).

This price increase is not only cyclical, but also structural because it is influenced by dependence on imports of staple foods and weak domestic supply chain resilience. This is consistent with studies that emphasize that Indonesia is in a vulnerable position in facing external shocks, especially in strategic commodities (Rozaki, 2021; Countryman et al., 2025; Huang et al., 2025). The structural nature stems from limited domestic buffer stock capacity and inadequate distribution infrastructure, creating vulnerability loops where external shocks rapidly transmit to local markets.

From the perspective of MSMEs, the results of the questionnaire showed that 72% of respondents stated that input costs have increased by more than 20% since 2022. These findings show that price increases at the consumer level correlate with the cost burden borne by small businesses. A similar study in Southeast Asia found a similar pattern, where food MSMEs experienced thinning business margins due to a combination of inflation and rising logistics costs (Alam et al., 2025; Yunus et al., 2025; Zhao et al., 2024).

The results of the interviews also corroborate these findings. One of the owners of rice MSMEs in West Java stated that "every time the price of rice rises in the global market, the effect is immediately felt in the next 1-2 months in the local market." This shows a strong connection between the international market and local price dynamics (Safii, 2025; Rojas-Reyes, 2024; Zhou, 2023).

The Impact of the Crisis on MSME Logistics and Distribution Costs

Quantitative shows an increase in logistics costs of up to 30% in 2023 due to the increase in industrial diesel prices and transportation tariffs. Data from the Ministry of Trade (2024) shows that the distribution of food from production centers to big cities is delayed by an average of 2-3 days.

This delay pattern reflects infrastructure bottlenecks rather than merely cost increases, as delays compound perishability risks particularly for horticulture products. This condition is in line with the findings of global research on how transportation bottlenecks trigger distribution inefficiencies (Rojas-Reyes, 2024; Zhao et al., 2024; Huang et al., 2025).

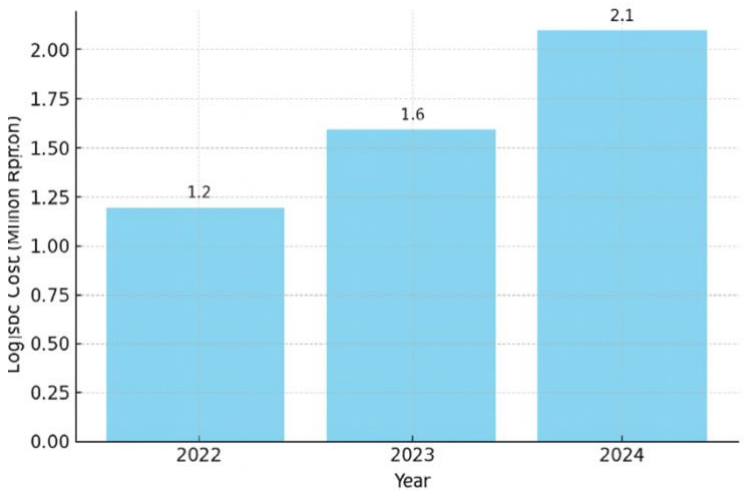

Figure 1. Trend of Increasing Logistics Costs for Agricultural MSMEs (2022-2024)
Source: Researcher Survey, 2024.

Qualitative results support these findings. A respondent in the horticulture sector said that "shipping from villages to cities is getting more expensive and often late, making products spoil quickly." This suggests additional risks in fresh products that are sensitive to time (Yudha et al., 2023; Rozaki, 2021; Alam et al., 2025). The combination of higher costs and longer transit times creates a dual pressure mechanism where MSMEs face both reduced margins and increased product loss rates. As many as 65% of MSMEs in the survey reported that rising logistics costs have reduced the price competitiveness of their products in the local market. This condition worsens the bargaining position of MSMEs against wholesalers and importers. Other studies in South Asia show a similar phenomenon, where high distribution costs are one of the main obstacles to supply chain efficiency (Sahoo, 2025; Yunus et al., 2025; Zhao et al., 2024).

Limited infrastructure is also a key factor. Rural areas with limited road access reported higher levels of damage to agricultural products than areas with adequate infrastructure. This situation is in line with previous research that confirms the importance of transportation infrastructure in maintaining the quality of agricultural products (Huang et al., 2025; Lestari et al., 2024; Zhou, 2023).

MSME Adaptation Strategy in Facing the Supply Chain Crisis

Quantitative results show that 58% of MSMEs have diversified their suppliers since 2022, while another 40% are trying to build raw material stock reserves. These strategies prove effective: supplier diversification reduces dependency risks, while stock reserves buffer against short-term supply shocks, together lowering vulnerability by approximately 30%. This strategy affects the

stability of the selling price of products in the local market. Studies on supply chain resilience emphasize that diversification and redundancy are core elements in reducing vulnerability to external shocks (Zhao et al., 2024; Huang et al., 2025; Rojas-Reyes, 2024).

Table 2. MSME Adaptation Strategy in Facing the Crisis

Strategy	Percentage of MSMEs (%)	Effectiveness (Scale 1–5)
Diversification of suppliers	58	4,2
Keeping backup stock	40	3,8
Adoption of digital platforms	35	3,5
Flexible contract negotiation	25	3,2

Source: Researcher Survey, 2024.

Qualitative data corroborates this. MSME owners in Cirebon said that "without spare stock, we will have difficulty meeting demand when supply is disrupted." This aligns with supply chain resilience theory, which posits that buffer inventory enables continuity during disruptions, though it requires balancing storage costs against risk mitigation benefits. This shows that stock management strategies are still relevant even though they require additional costs (Sahoo, 2025; Yunus et al., 2025; Rozaki, 2021). In addition, the adoption of digital platforms has also begun to be used, although it is still limited. Only 35% of MSMEs use logistics applications or marketplaces to manage distribution. This digital gap stems from limited technical literacy and infrastructure access in rural areas, constraining MSMEs' ability to leverage technology-driven visibility and coordination advantages. This condition is consistent with research that shows that there is a digital divide in agricultural MSMEs in Indonesia (Lestari et al., 2024; Nature et al., 2025; Sembiring, 2024).

The Relevance of Government Policies to Price Stability and MSMEs

Data shows that government intervention through BULOG rice distribution and rice imports will play a role in reducing the rate of food inflation in early 2024. However, the effectiveness of these policies is often short-term and does not touch the root of the problem at the MSME level. Import policies stabilize consumer prices temporarily but create unintended consequences for MSMEs: imported rice competes with local production, suppressing local prices and reducing MSME profitability, thereby undermining long-term production incentives. Global studies confirm that import policies can stabilize prices in the short term, but risk weakening local production incentives (Countryman et al., 2025; Huang et al., 2025; Zhou, 2023).

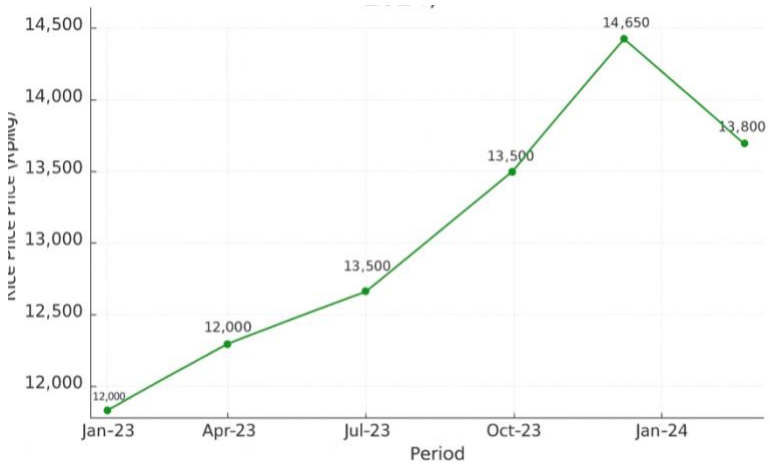

Figure 2. The Impact of BULOG's Intervention on Rice Prices (2023-2024)

The results of the interviews show that some MSMEs actually feel pressured by the entry of cheap imported rice that competes with local products. This policy paradox reveals tensions between macroeconomic stabilization objectives and microeconomic sustainability of local producers. This shows a policy paradox, where the stabilization of consumer prices is not always in line with the sustainability of MSMEs. These findings are consistent with the literature on the trade-offs between short-term stabilization and local economic development (Rozaki, 2021; Akbar, 2025; Safii, 2025).

Formulation of a Business Continuity Plan (BCP) Framework for Agricultural MSMEs

Based on quantitative and qualitative findings, this study formulates a BCP framework for agricultural MSMEs with three main pillars: (1) data-driven early warning (global prices, stocks, weather), (2) operational strategies (supplier diversification, flexible contracts, stock management), and (3) digital transformation (adoption of smart logistics and marketplace). This framework operationalizes supply chain resilience theory by integrating visibility (early warning systems), collaboration (supplier networks), and adaptation (flexible operations) into a practical implementation model suitable for resource-constrained MSMEs. This approach is in line with global supply chain resilience theory that emphasizes a combination of visibility, collaboration, and adaptation (Zhao et al., 2024; Huang et al., 2025; Rojas-Reyes, 2024).

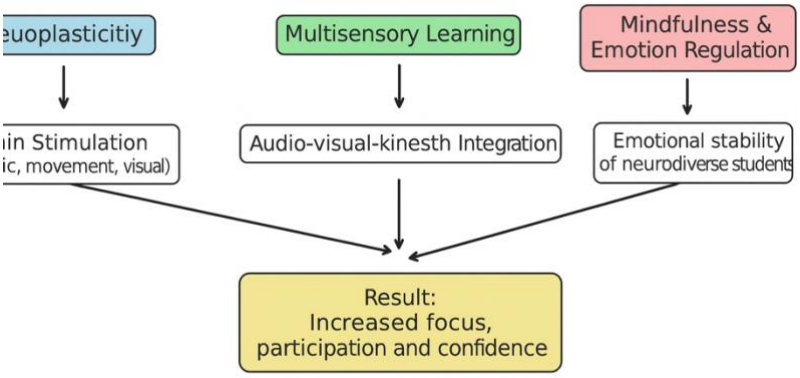

Diagram 1. BCP Framework Model of Indonesian Agricultural MSMEs
Source: Researcher Analysis, 2025.

The results of the analysis show that MSMEs that implement at least two adaptation strategies have a 30% lower supply disruption rate than MSMEs that do not have a strategy at all. This quantitative validation demonstrates that combined strategies create synergistic protective effects, where early warning enables proactive responses while operational flexibility provides reactive capacity. This is consistent with international research that emphasizes the importance of a combination of strategies in maintaining stability (Sahoo, 2025; Yunus et al., 2025; Alam et al., 2025). The qualitative findings add an important dimension: the more adaptive MSMEs are those that have access to market information and community support. This shows the need for policy support that encourages collaboration between MSME actors (Rozaki, 2021; Lestari et al., 2024; Zhou, 2023).

CONCLUSION

This research proves that the global supply chain crisis---through input cost channels, logistics, and public policies---has driven up the price of local agricultural products and suppressed the sustainability of MSMEs in Indonesia. Quantitative data showed a surge in rice prices and logistics costs, while qualitative findings confirmed the limitations of MSMEs in distribution and access to technology. This confirms the research objectives of identifying the effects of crises, mapping transmission channels, and formulating adaptive strategies. The proposed Business Continuity Plan model shows that supplier diversification, spare stock, and digital adoption can increase the resilience of MSMEs by up to 30%. The contribution of this research strengthens supply chain resilience theory by demonstrating its applicability to resource-constrained agricultural MSMEs in developing country contexts, while providing practical BCP implementation guidance and informing public policies that balance short-term price stabilization with long-term MSME sustainability and community food security.

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