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# The Impact of Swine Flu Outbreak in Retailing Pig Business in Malabon Central Market

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## ABSTRACT

The swine flu outbreak that happened in 2020-2023 affected the local pig retail industry, producing economic, behavioral, and operational challenges. A study was conducted at the Malabon Central Market in SY 2023-2024 to determine the impact of this outbreak in a local market. While declines in pork demand and rising production costs were expected outcomes, this study uncovered localized resilience strategies employed by small and mid-scale retailers. Using qualitative case analysis, the research highlights how vendors coped with the impact of the swine flu outbreak through informal supplier networks, consumer education efforts, and diversification into processed products and alternative sales channels. These findings elucidated the resilience theory and crisis communication frameworks by demonstrating how grassroots initiatives mitigate consumer fear and stabilize market operations during health crises. The study further identified gaps in government response and emphasized the importance of community-driven interventions in sustaining profitability. By situating Malabon's experience within broader discussions of food supply chain vulnerability, the research offers new perspectives for policymakers, practitioners, and scholars seeking to strengthen agricultural resilience against future outbreaks.

*Keywords:* Swine Flu Outbreak, pig retailing, resilience strategies, consumer trust, crisis communication, biosecurity

African Swine Flu (ASF) was first discovered in Kenya, East Africa and from there spread across countries in Africa before eventually reaching Europe and South America in the 1960s. It was found to have infected wild boar populations in Georgia in 2007 and spread to countries east of Georgia such as Russia. In August 2018, ASF outbreaks were described in China particularly northeast China. The impact was great for China since it is responsible for 50% of the global pig population. Not even a year after, ASF reached the Philippines with the first outbreak occurring in Rizal province in July 2019 that reduced pig production by 9.8% towards the end of 2019. There is no solid proof to pinpoint the source of infection in the Philippines but in June 2019, before the ASF virus was detected in pigs, luncheon meat that was confiscated at an international airport was confirmed positive for ASFV by PCR. Since then seven outbreaks have occurred in two months and the disease eventually swept over 31 provinces in eight different regions in Luzon. The spread of the disease is attributed to insufficient biosafety measures and mobility of personnel (Fernandez-Colorado et al. 2024).

The current study examined how swine flu outbreaks affected retail pig businesses like those at the Malabon Central Market. Pork was trucked in daily to Malabon Central Market from Bulacan, Pampanga, Batangas, Rizal, and other nearby provinces, processed in slaughterhouses, and distributed to vendors. Bulacan is currently the largest hog-producing province in Luzon. Pampanga and Batangas are major suppliers of live pigs and pork carcasses to Metro Manila. Rizal and Laguna support smaller-scale backyard farms supplying wet markets. Malabon Central Market functions as a distribution hub, not a production site. Vendors purchased pigs or pork cuts from traders and wholesalers who transported livestock and meat from provincial farms. Malabon's vendors relied on supplier networks and provincial farms, not local piggeries. There are no major piggeries in Malabon since Malabon's land use is urban residential, commercial, and industrial. It is not zoned for livestock farming.

This localized perspective provides valuable insights into the broader issue of infectious disease impacts on agricultural enterprises (Yu et al., 2023). Pig farming and retailing play a vital role in food production and economic stability, making it crucial to understand the challenges that health crises such as swine flu present to this sector (Wedzerai, 2022).

The study hopes to be able to provide both practical and theoretical contributions. For pig farmers and retailers, the research identified vulnerabilities in supply chains, consumer trust, and profitability, while also documenting grassroots resilience strategies such as supplier-sharing networks, diversification into processed products, and consumer education campaigns. For consumers, the study underscored the role of accurate information and safety measures in shaping purchasing decisions and restoring confidence in pork products. Policymakers and government agencies gain insights into how regulatory responses influence market stability, enabling them to design more effective interventions tailored to local contexts. For researchers, the study enriched the literature by situating global health crises within the micro-level dynamics of community markets, thereby extending resilience theory and crisis communication frameworks.

The different dimensions of the study highlight the fact that swine flu outbreaks not only disrupt immediate sales and operations but also expose systemic weaknesses in communication, supply chain management, and consumer behavior. Understanding these dynamics within Malabon Central Market provided a foundation for developing community-driven resilience strategies that can be replicated in other local contexts. This study therefore not only offered localized insights valued for their immediate relevance but also contributed to broader discussions on agricultural sustainability and public health preparedness.

The purpose of this study is to show how swine flu outbreaks can result in operational disruptions and resource shortages; how consumer behavior can shift as influenced by fear, misinformation, and breakdown of trust; and finally, how resilience is achieved through diversification, cooperation, and grassroots crisis communication.

At the same time, the study addresses a critical research gap. While much has been written about national level responses and formal institutional mechanisms during animal health crises, far less is understood about the micro-level resilience strategies that emerge within informal urban food markets. In particular, the Philippine context remains underexplored, where everyday practices of vendors, consumers, and community actors reveal adaptive mechanisms that are vital yet often overlooked in shaping food security and public health resilience.

The objectives of the study are as follows:

- To investigate the impact of swine flu on input supply and associated costs within the pig retail supply chain
- To analyze the shifts in consumer behavior regarding pork demand
- To identify and assess the economic resilience strategies employed by retailers to safeguard profitability

The study hoped to answer the following specific questions.
**SQ1: Supply Chain Disruptions** – In what ways does swine flu affect input supply and associated costs for pig retailers?

**SQ2: Consumer Behavior Shifts** – How does swine flu reshape consumer demand and purchasing decisions regarding pork?

**SQ3: Economic Resilience Strategies** – What adaptive measures and cooperative practices safeguard profitability amid outbreaks?

## REVIEW OF RELATED LITERATURE AND STUDIES

### Economic Impacts of Miscommunication During the Swine Flu Outbreak

H1N1 is commonly called swine flu virus which caused the 2009-2010 swine flu pandemic that triggered significant economic consequences rooted in public misunderstanding and policy reactions. Mislabeling led to unwarranted fears about pork consumption, despite scientific assurances that the illness could not be transmitted through food. Countries such as Russia and

China imposed bans on North American pork, disrupting markets and straining producers (Ralte, 2009; Congressional Research Service, 2009).

**Global Trade Policies and Economic Consequences of Swine Flu**

International trade restrictions during the H1N1 outbreak illustrate how policy responses amplify economic impacts. Despite clarifications from organizations such as WHO and USDA, bans imposed by countries like Russia and China triggered price declines and market instability. These cases show how external shocks ripple through local markets, underscoring the vulnerability of pig retailers in Malabon to global trade dynamics.

**Public Health Crises and the Vulnerability of Food Supply Chains**

Pandemics disrupt food supply chains through labor shortages, logistical delays, and shifts in consumer demand. Cardoso et al. (2021) highlight that inadequate preparation amplifies disruptions in food systems, noting that epidemics affect both supply-side logistics and demand-side purchasing behavior.

**Consumer Behavior During Health Crises**

Consumer fears during outbreaks significantly reduce demand for pork products. Ranola (2021) found that misinformation and safety concerns led to revenue losses for small scale retailers, while De Guzman (2021) emphasized the role of timely information and public education in restoring consumer trust.

**Local Market Resilience Strategies**

Studies on grassroots resilience highlight the importance of vendor cooperation, diversification, and consumer engagement. Informal supplier-sharing networks, diversification into processed products, and consumer education campaigns have been documented as effective strategies in sustaining profitability during crises.

**Tourism and Pork Industry Losses in Mexico**

Mexico faced significant economic losses from the H1N1 outbreak, especially in tourism and pork industries. Rassy and Smith (2013) noted that the country lost nearly one million international visitors, resulting in about $2.8 billion in lost tourism revenue. At the same time, the pork sector suffered from reduced production and trade restrictions driven by consumer fear. This case highlights how health crises can deeply affect export dependent economies and reveal the vulnerabilities of interconnected global markets.

**Global Economic Burden and Policy Implications**

The broader economic burden of the H1N1 pandemic was substantial. Suh et al. (2012) estimated that South Korea incurred approximately $1.09 billion in direct and indirect costs, equivalent to 0.14% of its GDP. Notably, the indirect costs were significantly higher for men, attributed to greater wage disparities. These figures highlight the extensive economic strain pandemics can impose on national economies and the importance of targeted policy interventions.

**Supply Chain Disruptions and Global Pork Industry**

Swine influenza and other animal health crises have repeatedly disrupted pork supply chains worldwide. Salvesen and Whitelaw (2021) emphasized that influenza A viruses in swine are endemic pathogens that negatively affect animal welfare and economic performance, while also posing zoonotic risks. They argue that effective control strategies are essential to stabilize supply chains and protect both producers and consumers. Similarly, Wu, Niu, and Santibanez Gonzalez (2025) noted that pandemics cause dual disruptions on the supply side (labor shortages, logistics delays) and demand side (panic buying, shifts to online purchasing) which mirror the challenges faced by pig retailers in Malabon Central Market.

**Consumer Behavior and Market Volatility**

Consumer perceptions of risk during health crises significantly affect pork demand. Żurek and Rudy (2023) reviewed how the COVID-19 pandemic reshaped consumer purchasing

behavior in meat markets, showing reduced in-person buying and increased reliance on packaged or certified products. Media coverage also amplifies consumer fears as shown by the study by Frontiers in Sustainable Food Systems (2025) which found that media reports magnify epidemic risk signals, exacerbating pork price volatility and consumer avoidance. These findings reinforce Ranola (2021) and De Guzman (2021) who both showed that misinformation and media narratives are central to demand fluctuations.

**Local Market Resilience and Adaptive Strategies**

Resilience in food systems often emerges from grassroots and short supply chain initiatives. Ušča and Tisenkopfs (2023) documented how short food supply chains in Latvia adapted during COVID-19 by strengthening direct purchasing networks, which stabilized both supply and consumer confidence. Delos Reyes and Padrid (2024) highlighted similar resilience in the Philippines, where households and local vendors developed disaster-resilient supply chains to secure food security during pandemic disruption. Boyacı-Gündüz et al. (2021) further argued that resilience requires transformation of food systems through diversification, stakeholder collaboration, and consumer engagement.

**Broader Economic Impacts of Health Crises**

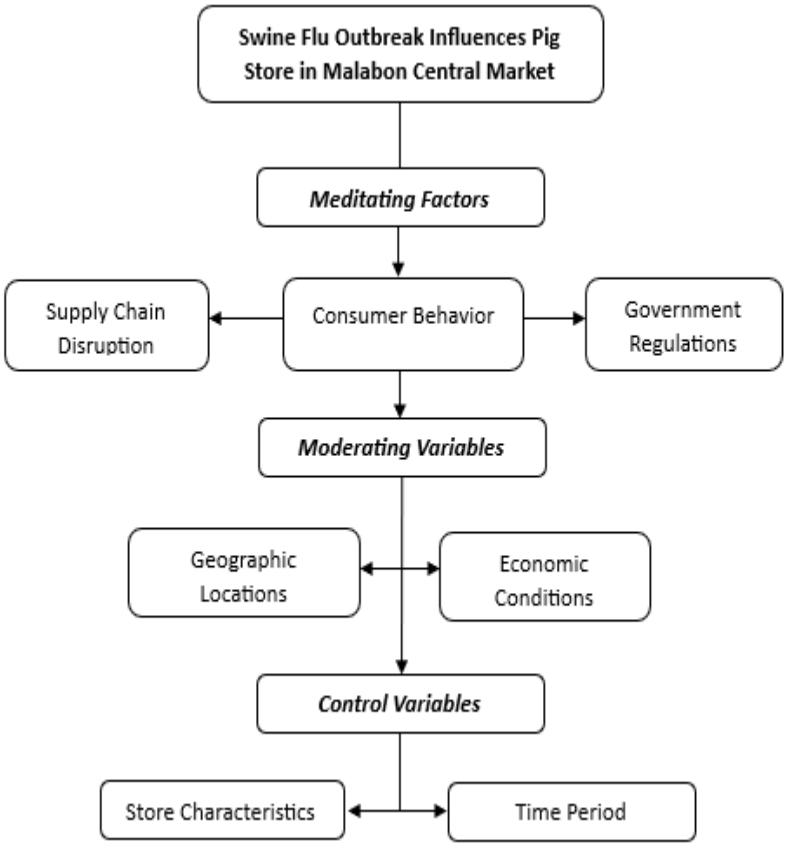
Beyond local markets, global analyses underscore the extensive economic burden of pandemics. McKibbin (2009) at Brookings noted that swine flu affected tourism, food, and transportation industries due to declining public confidence. Elliott (2009) from the Foreign Policy Association added that H1N1 had implications not only for trade but also for international relations, as countries-imposed travel advisories and restrictions. These broader perspectives contextualize the vulnerabilities of Malabon's pig retailers within global economic dynamics.

**Conceptual Framework**

**Figure 1** summarizes the conceptual framework for examining how the swine flu outbreak influenced pig store profitability in Malabon Central Market. It highlighted mediating factors such as supply chain disruption, consumer behavior, and government regulations, alongside moderating variables like

geographic location and economic conditions. Control variables, including store characteristics and period, were also considered, providing a concise overview of the study's analytical approach.

**Figure 1**
*Conceptual Framework*




## METHODOLOGY

**Research Design**

The study employed a qualitative case study design to examine the impact of the swine flu (H1N1) outbreak on the retail pig industry in Malabon City, Philippines. This design was selected to capture the lived experiences of retailers and stakeholders directly affected by the outbreak. Semi-structured interviews, document analysis, and non-participant observation were used as primary data collection techniques, ensuring a comprehensive understanding of both predictable outcomes and emergent resilience strategies.

**Research Locale and Population**

The research was conducted at the Malabon Central Public Market, focusing on pig retail and wholesale stalls. This location was chosen because of its concentration of businesses engaged in live pig sales, meat distribution, and related services, which provided context-specific data relevant to the study's objectives.

The participants in this study were pig retailers, wholesalers, and stall workers operating within Malabon Central Market, one of the busiest meat distribution hubs in Metro Manila. They were selected because of their direct involvement in the daily operations of pig retailing and their firsthand experiences during the swine flu outbreak. Business owners provided insights into management decisions, supply chain adjustments, and profitability concerns, while vendors and stall operators contributed perspectives on consumer interactions, sanitation practices, and sales fluctuations. Wholesalers and distributors were also included to capture upstream challenges in sourcing pigs and pork products, thereby offering a more complete view of the market's dynamics.

The criteria for inclusion required that participants were actively engaged in pig retailing or wholesale operations within Malabon Central Market during the swine flu outbreak, had firsthand experience of its effects, and were willing to participate in interviews and observations with informed consent. Accessibility and availability during the data collection period were also considered to ensure reliable engagement.

**Data Collection Plan**

This study utilized a multi-method qualitative approach to data collection, integrating semi-structured interviews, document analysis, and non-participant observation to comprehensively examine the effects of the swine flu (H1N1) outbreak on retail pig businesses in Malabon. Semi-structured interviews served as the primary method for gathering detailed insights from business owners, managers, and key stakeholders directly involved in the pig retail trade at Malabon Central Market. Each interview lasted approximately 45 to 60 minutes and followed a flexible interview guide designed to explore several key areas, including the perceived impact of the swine flu outbreak on daily business operations, customer behavior, financial performance, and supply chain logistics.

Additionally, relevant business documents were collected and reviewed to provide objective evidence of operational and financial trends. These documents included monthly and annual sales reports, profit and loss statements, inventory logs, transaction receipts, and veterinary or health reports related to pig stock.

Non-participant observation was also conducted at the market stalls to capture real-time data on operational practices and consumer interactions. This included observing customer flow, purchasing behaviors, pricing strategies, sanitation and biosecurity measures, and supply logistics such as pig deliveries and transport vehicle conditions.

By combining these three complementary data collection methods—interviews, document analysis, and observation—the study achieved data triangulation and ensured a well-rounded, credible, and context-rich understanding of how the swine flu outbreak affected the profitability and operational dynamics of pig retail businesses in Malabon.

**Data Analysis**

The qualitative data collected from interviews, observations, and documents were subjected to thematic analysis, following a systematic coding procedure to ensure both depth and reliability. The process began with open coding, where the researcher carefully read through interview transcripts and field notes line by line,

assigning initial codes to meaningful segments of text. These codes represented specific ideas, actions, or experiences, such as "consumer fear," "supplier-sharing," or "price increase." At this stage, the goal was to remain open to all possible interpretations without imposing preconceived categories, allowing the data to speak for itself.

Once the initial codes were established, the researcher proceeded to axial coding, which involved grouping related codes into broader categories and identifying relationships among them. For example, codes such as "consumer avoidance," "misinformation," and "vendor reassurance" were clustered under the category consumer behavior shifts, while "supplier-sharing" and "collaborative marketing" were grouped under community-based resilience strategies. This step allowed the researcher to move beyond descriptive coding and begin identifying patterns and connections that explained how retailers adapted to the outbreak.

Finally, selective coding was applied to integrate the categories into overarching themes that directly addressed the study's objectives. These themes included: (1) the impact of swine flu on input supply and costs, (2) shifts in consumer demand and trust, and (3) strategies for safeguarding profitability amid crisis conditions. Through selective coding, the researcher refined the analysis to highlight both predictable outcomes (e.g., sales decline, cost increases) and novel insights (e.g., grassroots consumer education and informal cooperation among vendors). This layered coding process ensured that the findings were not only descriptive but also analytical, contributing to theoretical discussions on resilience, crisis communication, and social capital.

To enhance credibility, the researcher employed constant comparison throughout the coding process, revisiting earlier codes and categories to ensure consistency and coherence. Triangulation across interviews, documents, and observations further validated the themes, while memo-writing during coding helped capture emerging insights and reflexive considerations. By following this structured approach, the study ensured that the coding process was rigorous, transparent, and capable of uncovering both expected and unexpected dynamics within Malabon Central Market.

**Ethical Considerations**

The research was granted ethical clearance by the UE Ethical Review Committee on April 20, 2024. Participants received informed consent forms outlining the study, potential risks, and their rights, including the option to withdraw anytime without penalty. Confidentiality was strictly maintained; all responses were anonymized, and data was securely stored and accessed only by the principal researcher. Individual answers were not shared among participants to protect privacy and group dynamics.

## RESULTS AND DISCUSSION

Results showed how the swine flu (H1N1) outbreak disrupted input supply and costs, altered consumer demand for pork, and pressured profitability. More importantly, the outbreak surfaced the mechanisms of adaptation that retailers in Malabon Central Market mobilized to stabilize operations. These mechanisms localized supplier-sharing, interpersonal trust-building, and collaborative diversification situate resilience within the micro-level dynamics of a community market. The following themes emerged from the interviews.

### THEME 1: Swine Flu's Effect on Input Supply and Costs

Retailers and wholesalers described immediate disruptions in essential inputs such as feeds, veterinary supplies, packaging, and transport. One wholesaler explained: *"the price of feeds shot up overnight. What used to cost ₱1,200 per sack suddenly became ₱1,600, and we had no choice but to buy because the pigs needed to eat."* A stall owner added: *"medicines became hard to find. We had to ask other vendors if they knew suppliers who still had stocks, otherwise our pigs would get sick."*

These localized disruptions in Malabon were significant but did not reach the catastrophic scale of African Swine Fever (ASF) outbreaks in the Philippines (2019–2025), which caused mass pig mortality and wiped out herds across Luzon. ASF led to a 75% decline in pork supply nationwide, forcing reliance on imports and creating long-term shortages (Fernandez-Colorado, Kim, Flores, & Min, 2024; Gomez, 2024; Portugaliza, 2025). In contrast, Malabon's

swine flu outbreak did not kill pigs directly but instead created economic stress through input inflation and logistical disruption.

Globally, China's ASF outbreak (2018–2020) devastated supply chains, eliminating nearly half of its pig herd and destabilizing global pork prices (Gale, Kee, & Huang, 2023; Han, Yu, & Clora, 2022; Elleby, 2023). Compared to these events, Malabon's crisis was less severe biologically but still destabilizing economically. Its resilience stemmed from community-driven supplier-sharing and pooled purchasing, which cushioned the blow in ways not possible in large-scale, export-dependent economies. This suggests that Malabon's dense vendor networks and localized sourcing practices were critical factors in mitigating the worst consequences of input disruptions.

**THEME 2: Swine Flu's Influence on Pork Demand**

Retailers reported an acute decline in pork purchases driven primarily by fear and misinformation. One vendor recalled: *"customers would pass by our stalls and cover their noses, as if just being near pork could make them sick."* Another retailer noted: *"even our suki [regular buyers] stopped coming. They said their families were afraid to eat pork, even if we explained it was safe."* These testimonies highlight how fear was the most immediate trigger for reduced demand in Malabon.

However, fear was not the only reason behind the decline. Misinformation spread through media and word-of-mouth amplified consumer avoidance, while broader concerns about food safety and hygiene also played a role. A stall worker explained: *"we started showing our health certificates to customers and cleaning the tables in front of them. It helped them see we were serious about safety."* This indicates that consumer hesitation was tied not only to fear of illness but also to perceptions of whether vendors could demonstrate visible safety practices. Hence, trust in sanitation and transparency became just as important as dispelling fear.

Comparisons with other outbreaks show that this consequence was widespread. During the 2009 H1N1 outbreak in Mexico, pork demand collapsed due to mislabeling, even though the virus was not transmitted through food. The economic impact was severe, with losses extending beyond agriculture into tourism, costing the country about $2.8 billion (Siapka, 2010; World Bank,

2010). Similarly, in South Korea, the H1N1 pandemic imposed $1.09 billion in costs, with consumer avoidance central to the downturn (Lee & McKibbin, 2014). In both cases, fear and misinformation were intertwined, leading to drastic reductions in pork consumption.

The seriousness of these declines varied by context. In Malabon, the drop in demand was sharp but temporary, as grassroots communication by vendors gradually restored consumer confidence. In Mexico and South Korea, however, the decline was prolonged and more damaging because consumer trust was harder to rebuild at a national scale. Export-dependent economies suffered more severely, as international bans and advisories compounded local consumer avoidance (Rassy & Smith, 2013; Lee & McKibbin, 2014). Malabon's localized market, by contrast, was insulated from global trade shocks and relied on interpersonal trust to recover.

Another important dimension is whether consumers shifted their diets. Evidence from other outbreaks suggests that dietary substitution was common. In the Philippines during ASF outbreaks, many households shifted to chicken, beef, or fish as alternatives, while some urban consumers experimented with vegetarian diets due to heightened concerns about meat safety. Globally, studies during H1N1 and COVID-19 outbreaks showed increased reliance on packaged, certified, or non-pork meats, reflecting a shift toward products perceived as safer. In Malabon, vendors observed that some customers temporarily avoided pork altogether, but most substituted with poultry or fish rather than adopting vegetarian diets. The stall worker's reassurance — *"As long as you cook pork properly, it's safe"* — reflects how consumer education helped prevent a permanent dietary shift away from pork.

**THEME 3: Safeguarding Profitability Amid Swine Flu Outbreaks**

Profitability in Malabon was threatened by rising costs and declining demand, yet retailers safeguarded margins through diversification and collaboration. One retailer explained: *"we started selling frozen cuts and marinated pork. Customers liked it because they didn't have to worry about freshness."* Another added: *"we agreed among ourselves not to undercut prices. If one vendor lowered too much, it would hurt everyone."* A wholesaler emphasized: *"sharing supplier contacts was the only way to survive.*

*If one of us found cheaper feeds, we told the others."* These strategies — diversification into processed products, collective pricing agreements, and supplier-sharing — proved effective in stabilizing profitability within Malabon Central Market.

However, the question arises: would these strategies be equally successful in other places where outbreaks occurred? Evidence from the literature suggests that while grassroots cooperation and diversification are valuable, they are not always sufficient in contexts where the outbreak caused irreversible structural damage. For example, during the African Swine Flu (ASF) outbreak in the Philippines (2019–2025), many small-scale pig farms and retailers permanently closed because entire herds were culled to contain the virus (Fernandez-Colorado, Kim, Flores, & Min, 2024; Portugaliza, 2025). Unlike Malabon's swine flu episode, which primarily disrupted consumer trust and input costs, ASF created a biological crisis that eliminated the very foundation of the pork business. In such cases, no amount of diversification or collaboration could sustain profitability because the product itself was no longer available.

Globally, the ASF outbreak in China (2018–2020) demonstrated similar nonreversible impacts. Nearly half of China's pig herd was lost, and countless small and mid-scale producers folded up permanently. The collapse of these businesses was not due to poor strategy but to the sheer scale of mortality and trade restrictions, which left vendors with no pigs to sell and no viable alternatives to sustain their operations (Han, Yu, & Clora, 2022; Elleby, 2023; Gale, Kee, & Huang, 2023). In contrast, Malabon's vendors were able to adapt because pigs remained available, and the crisis was rooted in consumer perception rather than herd destruction.

This comparison highlights that Malabon's resilience strategies diversification, collaboration, and grassroots communication were highly effective in a localized outbreak where the biological impact was limited. Yet in more severe outbreaks, such as ASF, these strategies would not have been enough. The Malabon case therefore illustrates the importance of context: resilience strategies can mitigate profitability pressures when supply remains intact, but they cannot reverse structural collapse when the outbreak destroys the core of production.

## CONCLUSION

The swine flu outbreak in Malabon Central Market triggered immediate disruptions in input supply, notably in feeds, veterinary products, and transport. While the biological impact was limited compared to ASF, the economic strain was acute. What sets Malabon apart is the emergence of informal, community-driven mechanisms—supplier-sharing, pooled purchasing, and flexible sourcing that cushioned vendors from deeper collapse. These practices highlight a critical micro-level resilience mechanism often overlooked in broader public health and agricultural studies. Unlike export-dependent systems, Malabon's dense vendor networks and localized sourcing allowed for rapid adaptation, suggesting that informal urban food markets possess unique capacities for buffering shocks when formal systems falter.

Consumer avoidance of pork in Malabon was driven not by biological risk but by fear, misinformation, and eroded trust. Vendors responded with grassroots crisis communication—displaying health certificates, performing visible hygiene routines, and engaging directly with customers—to rebuild confidence. This interpersonal approach proved more effective than top-down messaging, underscoring the role of social capital and vendor credibility in shaping consumer behavior.

The Malabon case reveals that micro-level trust mechanisms are central to demand recovery in informal markets, especially during health crises. It expands crisis communication theory by showing that resilience is not just institutional but relational, rooted in everyday interactions between vendors and consumers. Despite rising costs and falling demand, pig retailers in Malabon sustained profitability through diversification (e.g., processed pork, frozen cuts) and collaboration (e.g., shared suppliers, coordinated pricing). These strategies stabilized margins without relying on price hikes, demonstrating that informal cooperation can be a powerful buffer against volatility.

However, the effectiveness of these strategies is context-dependent: they worked in Malabon because the outbreak did not eliminate the pig supply. In more severe crises like ASF, where herds were culled, such strategies would have been insufficient. This underscores that resilience in informal markets is contingent

on biological viability and that profitability preservation requires both adaptive tactics and a functioning supply base.

## RECOMMENDATIONS

To strengthen resilience against supply chain disruptions, local government and market authorities should formalize the informal supplier-sharing practices observed in Malabon into structured cooperatives. These cooperatives can pool resources, negotiate better terms with suppliers, and coordinate transport to reduce costs and ensure continuity of inputs. Training programs on contingency sourcing, logistics management, and biosecurity should be introduced to help retailers anticipate and respond to future crises. Institutionalizing these grassroots practices will stabilize input supply and protect small-scale retailers from external shocks.

In response to consumer behavior shifts, vendors should be empowered as frontline communicators through structured crisis communication protocols. Market authorities can provide standardized health certifications, hygiene signage, and simple scripts to help vendors counter misinformation effectively. Digital platforms and social media should be leveraged to extend grassroots consumer education campaigns beyond the market stalls, ensuring accurate information reaches a wider audience. These measures will reinforce consumer trust, making safety and transparency visible and personal, thereby stabilizing demand during health crises.

To safeguard profitability, pig retailers should expand diversification strategies into processed products, frozen cuts, and delivery services, supported by microcredit programs and subsidies for cold storage and packaging equipment. Collaborative practices such as coordinated promotions, shared logistics, and collective branding should be formalized to reduce volatility and enhance bargaining power. Policymakers and market leaders should encourage vendor associations to institutionalize these cooperative practices, ensuring that profitability is not only maintained during crises but strengthened through collective resilience. By aligning diversification with consumer preferences for safety and convenience, retailers can sustain margins while reinforcing trust and loyalty.

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