

Business Resilience And Digital Adaptation Of Grocery Stores In Waropen Regency, Papua

Arsianita Nur Fattah^{1*}, Alifia Ainun Rizky²

^{1,2}, *Department of Business Administration, Universitas Negeri Makassar*

Email: arsianitanf@unm.ac.id

ABSTRACT

This study aims to analyze the business resilience strategies and digital adaptation patterns of traditional grocery stores in Waropen Regency, Papua. Utilizing a descriptive qualitative approach, data were collected through in-depth online interviews with eight grocery store managers and operational documentation studies, then analyzed using the interactive model by Miles, Huberman, and Saldana (2014). The findings indicate that the business resilience of grocery stores relies on the discipline of daily capital turnover, tightening or eliminating credit facilities (kasbon) to maintain cash liquidity, and strengthening social capital through intensive communication among traders to mitigate supply chain disruption risks caused by severe weather and maritime transport delays. Meanwhile, the digital technology adoption process occurs gradually and selectively (gradual digital adaptation). Traders have adopted WhatsApp and bank transfer services for efficient communication and wholesale supply transactions. Five of the eight grocery stores had adopted Quick Response Code Indonesian Standard (QRIS); however, its use among end consumers remained low. This low utilization is associated with consumer preferences for cash transactions, low digital literacy, and basic infrastructure barriers such as PLN electricity outages and internet signal instability. This study concludes that accelerating MSME digitalization in remote areas requires an integrated approach that prioritizes fulfilling basic infrastructure reliability before promoting full integration of digital payment systems.

Keywords: *Business Resilience, Digital Adaptation, Grocery Store, QRIS, 3T Regions.*

INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) constitute a vital foundation of Indonesia's economic structure by supplying goods, generating income, and sustaining local economic activity (Tambunan, 2021). In areas with limited access to modern commercial hubs, micro-enterprises play an even more strategic role, as local stores and kiosks serve as the primary channels for residents to obtain daily necessities (Firmansyah, 2021). In this context, grocery stores are not merely small-scale retail units, but essential components of the local

economic infrastructure operating with limited capital, personal customer relationships, and high reliance on local market conditions and supply networks.

Changes in the business environment present micro-entrepreneurs with dual concurrent demands. On one hand, businesses must maintain liquidity, inventory availability, and customer relations when facing price fluctuations, shifting demand, and distribution disruptions. On the other hand, business owners increasingly confront technological advancements that alter communication, ordering, and payment methods. Thus, survival capacity is determined not solely by financial capacity, but also by the ability to select and adapt technologies to operational needs. Findings by Lestari, Abd Hamid, Shamsuddin, Kurniasari, & Yaacob (2024), demonstrate that small business resilience relates to crisis coping capacity, with technology utilization serving as a relevant aspect of that process.

The development of digital payments illustrates strong momentum toward MSME sector digitalization. One instrument developed in Indonesia is the Quick Response Code Indonesian Standard (QRIS). Bank Indonesia data cited in this text indicates that QRIS has been widely adopted by merchants, predominantly MSMEs. However, national achievements do not automatically reflect conditions across all regions. Network availability, electricity, digital literacy, consumer characteristics, and perceived technology benefits determine whether a technology can actually be integrated into daily operations.

At the micro-enterprise level, technology adoption is a contextual decision process. Santika, Musyaffi, & Zairin (2024) demonstrate that performance expectancy, effort expectancy, and financial literacy correlate with the intention to use QRIS. Nurqamarani, Fadilla, & Juliana (2024) also demonstrate the relevance of perceived usefulness, ease of use, optimism, convenience, and trust in QRIS adoption. These findings indicate that low QRIS usage should not automatically be framed as a digitalization failure. Entrepreneurs may adopt specific technologies that offer immediate benefits while deferring others that do not align with operational needs or local business environments.

This perspective is crucial when observing grocery stores in Waropen Regency, Papua. In a region characterized by infrastructure constraints and maritime transport dependencies, business survival strategies are inseparable from managing working capital, securing inventory availability, building supplier and peer-trader relations, and tailoring technology usage to local conditions. Consequently, grocery store digitalization must be understood as a gradual process rather than a uniform, simultaneous shift.

Prior research on MSME digitalization and resilience has largely employed quantitative approaches to test inter-variable relationships. For instance, Pambreni & Ayu Sudari (2025), examined the relationship between business digitalization and MSME resilience, while Juniansyah, Rosyidah, Pahrijal, & Ardhiyansyah (2025) quantitatively assessed digital transformation and resilience links. While these approaches provide empirical evidence of variable relationships, they insufficiently capture how micro-business owners make adaptive decisions amid infrastructure constraints. Meanwhile, (Limanta & Harjanti, 2026) showed that resistance to QRIS can be linked to perceived usefulness, difficulty levels, resource limitations, technology anxiety, and social influence.

This gap is particularly relevant in underdeveloped, frontier, and outermost (3T) regions. Much of the literature on MSME digitalization focuses on urban environments with relatively accessible infrastructure support. Grocery stores in Waropen present a different context: business sustainability is sustained by capital turnover discipline, credit control, peer social networks, and adaptation to distribution disruptions, while consumer-facing digital

payment usage remains limited. Thus, the core research problem is not merely whether grocery stores use digital technology, but how business owners build resilience and select viable technologies within an unready local ecosystem.

Based on this gap, this study analyzes two interconnected processes: business resilience formation and digital adaptation among grocery stores in Waropen Regency. Specifically, it examines cash flow management strategies, credit risk controls, and social network utilization in response to supply chain disruptions. Simultaneously, the study identifies WhatsApp and bank transfer adoption, QRIS usage readiness, and the consumer and infrastructure barriers affecting cashless payments. This focus aims to show that micro-enterprise digitalization in remote areas is an adaptive process shaped by ecosystem readiness rather than a simple matter of technological willingness.

METHOD

This study used a descriptive qualitative approach to analyze business resilience strategies and digital adaptation patterns among traditional grocery stores in Waropen Regency, Papua. Resilience was operationalized around operational sustainability and resource optimization, while digital adaptation focused on bank transfer utilization and QRIS adoption readiness. Informants were selected using purposive sampling among grocery store owners in Waropen Regency based on data access openness, operating duration, and representation of coastal retail characteristics. Data collection was conducted in 2026 through individual in-depth online interviews with eight grocery store managers and store operational documentation studies. The interviews were conducted by telephone using questions concerning business operations, financial management, store credit practices (*kasbon*), digital technology use, and challenges in maintaining business continuity. After the telephone interviews, the researcher used chat communication to clarify and reconfirm information that required further explanation. This process was used to obtain more complete information about the informants' experiences and business practices. Data analysis applied the interactive model by Miles, Huberman, and Saldaña (2014), comprising data condensation, data display, and conclusion drawing/verification. Data validity was tested through source triangulation and member checking to ensure finding credibility and objectivity.

RESULT AND DISCUSSION

Result

A. Business Profiles and Founding Motivations of Waropen Grocery Stores

In-depth interviews with eight grocery store managers in Waropen Regency reveal that micro-retail operations are deeply tied to local socioeconomic dynamics. Historically, most grocery stores in Waropen began as modest home-based setups or simple kiosks with limited working capital. Operational histories range from multi-generational businesses operating since 1978 to recently established units within the past five years (Table 1).

Table 1: Research Informant Profiles of Grocery Stores in Waropen Regency

Informant Code	Top Commodities	Supply Chain Logistics Mechanism	Store Credit Policy (Kasbon)	Adopted Digital Instruments
Informant 1	Staples & daily supplies	Local wholesale agents (Delivered / Self-pickup)	No credit (Pure cash system)	QRIS, Bank Transfer
Informant 2	Basic staples	Local suppliers & distributors	Refuses store credit/kasbon	Has not adopted
Informant 3	Retail cigarettes & staples	Large agents & stores	Strictly limited / Replaced with personal cash	QRIS
Informant 4	Full staples, bottled water, snacks, household items	Local wholesale agents (Pick-up trucks, trucks, motorcycles)	Strict control (Max. 3 days repayment limit)	WhatsApp, QRIS, EDC
Informant 5	Staples, beverages, cigarettes, cleaning goods	Local wholesale traders	No credit (Pure cash system)	WhatsApp, Bank Transfer, Note-taking App
Informant 6	Bottled water, snacks, cleaning products	Local wholesalers & sales distributors	No credit (Pure cash system)	WhatsApp, QRIS
Informant 7	Basic staples	Local wholesale agents	No credit (Preserving capital liquidity)	QRIS
Informant 8	Staples & daily food items	Staple suppliers / Local warehouse	No credit (Pure cash system)	WhatsApp, Bank Transfer, Social Media

Source: Primary interview data (2026)

The primary drivers behind establishing these businesses fall into two orientations: First, external Orientation (Local Public Need): Kiosks provide essential access to daily goods in a remote area historically lacking modern commercial facilities. Second, internal Orientation (Domestic Economy): Stores serve as the main economic support for owners' families, dealing primarily in fast-moving consumer goods (rice, cooking oil, sugar, eggs, instant noodles) along with high-turnover items like bottled water, snacks, toiletries, and retail cigarettes.

B. Supply Chain Vulnerabilities and 3T Geographic Challenges

Daily operations face structural vulnerabilities due to geographic isolation and basic infrastructure deficits. Inventory relies on local distributors/wholesalers in central Waropen and direct shipments from off-island suppliers (e.g., Java or neighboring cities). Transport relies heavily on pick-up trucks, cargo trucks, and motorized sea vessels. Heavy reliance on sea routes and extreme weather poses the greatest threat to operational continuity, as noted by one trader:

“Shipment are frequently delayed because sea and land transport access is highly weather-dependent: bad weather delays deliveries from outer islands.” (Informant 3, interview, 2026).

Bad weather causes unpredictable shipping delays, leading to retail stock shortages, wholesale price hikes, and reduced local purchasing power. Regional economic activity fluctuations also impact revenue stability; whenever municipal activity slows down, foot traffic and purchasing volumes drop significantly.

C. Business Resilience Strategies and Financial Risk Mitigation

Amid supply chain uncertainties and revenue fluctuations, Waropen grocery store managers demonstrate resilience through distinct operational and financial adaptation mechanisms:

1. Simple Cash Flow Management and Capital Discipline: Merchants continuously reinvest revenues from daily sales despite thin margins. Some owners separate personal/domestic finances from business working capital using simple ledger logs. As one manager explained: *"Every transaction has clear bookkeeping, both expenses and income, keep personal and business finances separate."* (Informant 5, interview, 2026).
2. Tightening and Eliminating Store Credit (Kasbon): To mitigate bad debt risks, most stores strictly refuse credit extensions to local buyers. Those offering limited credit apply short repayment windows (maximum 3 days) to preserve liquidity. Informants noted: *"our kiosk does not accept kredit, if extended, we allow around 3 days for repayment so working capital remains unaffected."* (Informant 2 and 4, interview, 2026).
3. Strengthening Relational Capital (Social Networks): During supply shortages, traders maintain active communication with peer merchants and suppliers to share stock information, vessel schedules, and price alignments to stay competitive. As highlighted by a trader: *"we maintain routine communication to receive early information about stock availability or arrival times, Anda always strive to keep promises."* (Informant 5, interview 2026).

D. Realities and Dynamics of Digital Technology Adoption

Digital transformation occurs gradually and selectively. WhatsApp and Bank Transfer / Mobile Banking are the most widely adopted tools. WhatsApp streamlines ordering coordination with sales agents, while bank transfers facilitate wholesale payments and occasional customer transactions. Regarding QRIS, implementation started between 2021 and 2023, primarily driven by bank promotions and a desire to accommodate cashless customers. However, customer usage remains low; most local consumers, especially older demographics, strongly prefer cash transactions. Consequently, merchants report that QRIS and digital tools have not yet significantly boosted revenue or customer growth.

E. Digital Inclusivity Barriers in Remote Areas

Digital adoption faces two major infrastructure barriers: First, unstable Internet Access: Frequent network disruptions interrupt real-time QRIS and transfer verifications. Second, frequent Power Outages: Regular power outages drain device batteries and disable cellular network infrastructure. Traders highlighted these issues:

“The main obstacles are frequent power outages and unstable signals... internet signals drop regularly.” (Informant 3 and 5, interview, 2026).

Technical constraints are compounded by uneven digital literacy among local consumers, making cash the safest and most practical daily transaction method.

Discussion

A. Micro-Enterprise Resilience: Between Financial Tightening and Social Capital

This study highlights that micro-enterprise resilience in remote areas is driven by operational flexibility and daily liquidity management rather than capital expansion. Eliminating or restricting credit (*kasbon*) represents a rational defense against bad debts in regions with limited formal banking access, where cash liquidity is essential for inventory replenishment. This aligns with Lestari et al. (2024), who emphasize that micro-enterprise resilience depends on internal adaptive capacity during operational crises.

Beyond financial measures, resilience relies heavily on social capital. When geographic isolation and weather disrupt supply chains, solid relationships among merchants and suppliers buffer against crisis impacts. Shared information on logistics and inventory confirms that local social networks serve as vital intangible assets for remote retail stability, supporting views by Tambunan (2021) and Firmansyah (2021) on MSMEs as local economic safety nets.

B. Gradual Digital Adaptation and QRIS Challenges

Uneven QRIS adoption and minimal revenue impacts in Waropen reflect practical adaptation to local ecosystem readiness rather than technological resistance. Merchants successfully adopt digital tools for supply chain operations (WhatsApp, bank transfers), but pause at end-consumer digital payment integration (QRIS). This underscores that payment technology adoption requires two-sided market readiness (merchant and consumer alignment).

Connecting with Santika et al. (2024) and Nurqamarani et al. (2024) regarding perceived ease and usefulness, Waropen merchants may intend to offer QRIS, but its perceived utility drops when consumers overwhelmingly prefer cash. Furthermore, these findings support Limanta and Harjanti (2026), who identified infrastructure constraints and technical instability as primary barriers to payment adoption. When consumers rely on cash and signals fluctuate, traditional payment methods remain the most efficient choice for merchants.

C. Policy Implications: The Need for Basic Infrastructure Fulfillment

The findings imply that policy drives to accelerate MSME digitalization will yield limited results without adequate basic infrastructure in 3T regions. Merchant demands for reliable electricity, cellular connectivity, and maritime logistics demonstrate that digitalization cannot exist in isolation. Digitalizing micro-enterprises in remote regions requires a holistic approach: local governments and stakeholders must secure supply chains, energy stability, and telecom coverage before pushing complex digital payment adoption. Without strong foundational infrastructure, digital mandates risk imposing added operational strain on remote micro-enterprises.

CONCLUSION

Business resilience and digital adaptation among grocery stores in Waropen Regency, Papua, are shaped by operational flexibility, local preferences, and regional infrastructure constraints. Store resilience in this 3T region rests on three core strategies: First, disciplined daily capital turnover and basic financial logging. Second, tightening or eliminating store credit (kasbon) to protect liquidity and prevent default risks. Third, leveraging social capital through active peer communication to navigate weather- and transport-related supply disruptions. Digital transformation follows a gradual, selective path. WhatsApp and bank transfers are successfully integrated into wholesale ordering and supply operations. Conversely, low end-consumer QRIS adoption represents a rational adjustment to local market unreadiness, driven by cash preferences, low digital literacy, and persistent power outages and network instability. These insights indicate that MSME digitalization policies in remote areas must avoid one-size-fits-all mandates. Authorities and stakeholders should adopt an integrated approach that prioritizes basic infrastructure reliability such as power grid stability and telecommunications coverage, before advocating complete digital payment integration across 3T micro-enterprises.

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