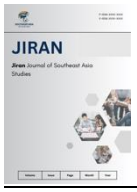

Journal of Southeast Asia Studies
Vol 7 No 2 July 2026
ISSN: 2686-6293 (Print) ISSN: 2686-6293 (Electronic)
Open Access: https://jiran.unaim-wamena.ac.id/jiran

Value Chain Inefficiencies in Local Agribusiness: Diagnosing the Long and Costly Agricultural Supply Chain in Majene Regency, West Sulawesi, Indonesia Using Porter's Value Chain Framework

Sahrul Salam[1], **Rizki Abdillah Tanjung** [2], **Nurlaela** [3], **Astina** [4], **Suhartono** [5]
[1,2,3,4,5] Universitas Sulawesi Barat, Majene, West Sulawesi, Indonesia
Corresponding email: *sahrulsalam@unsulbar.ac.id* | *rizki.abdillah@unsulbar.ac.id* | *nurlaelaunsulbar@gmail.com* | *astina@unsulbar.ac.id*| *suhartono@unsulbar.ac.id*

Article Info :
Received:
05/01/2026
Revised:
15/02/2026
Accepted:
06/03/2026

ABSTRACT

Agricultural supply chains in peripheral regions of Indonesia are characterized by structural inefficiencies that systematically disadvantage smallholder farmers while enabling disproportionate margin capture by multi-tiered intermediary networks. This study examines the supply chain architecture of Majene Regency, West Sulawesi—a predominantly agrarian coastal district whose smallholder farmers produce cocoa, coconut, cassava, and horticultural commodities yet consistently receive among the lowest farm-gate prices in the province. Employing Porter's (1985) Value Chain Framework as the primary analytical lens, supplemented by transaction cost economics and commodity systems analysis, this qualitative study maps the full supply chain from farm gate to end market, identifying value creation and value destruction points across five primary and four support activities. Data were collected through semi-structured interviews with 42 key informants—including smallholder farmers, village collectors (pengepul), sub-district and district-level traders, government extension workers, and cooperative officials—complemented by field observation and secondary data analysis. Findings reveal a supply chain characterized by five to six intermediary tiers, post-harvest losses of 20–30%, severe information asymmetry between farmers and traders, near-absent cold chain infrastructure, and monopsonistic buyer power concentrated among a small number of inter-regional traders. The cumulative effect is a retail-to-farm-gate price margin of 83–130%, with Majene farmers capturing only 8–15% of final consumer prices. Drawing upon the value chain analysis, the study develops a Agribusiness Value Chain Optimization Framework (AVCOF) and proposes six evidence-based policy interventions targeting chain compression, infrastructure upgrading, cooperative revitalization, digital price transparency, quality certification, and agricultural financial inclusion. Findings contribute to the literatures on agricultural value chain governance, smallholder market integration, and regional agribusiness development in Eastern Indonesia.

Keywords: *value chain analysis, Porter's framework, agricultural supply chain, smallholder farmers, Majene, West Sulawesi, agribusiness inefficiency, transaction cost economics, Indonesia*

1. INTRODUCTION

"Competitive advantage cannot be understood by looking at a firm as a whole. It stems from the many discrete activities a firm performs in designing, producing, marketing, delivering, and supporting its product." — Michael E. Porter (1985, p. 33). This foundational proposition, articulated in Porter's seminal work on competitive advantage, offers a powerful diagnostic lens not only for individual firms but for entire agricultural commodity systems in which the activities that determine value creation and appropriation are distributed across networks of geographically dispersed actors. In the context of smallholder-dominated agricultural economies in peripheral Indonesia, where value is routinely extracted by intermediary actors rather than captured by the primary producers who bear the

highest proportional production risks, value chain analysis provides an analytically precise tool for identifying the structural sources of systemic inequity and inefficiency.

Majene Regency (Kabupaten Majene), located on the western coast of Sulawesi in West Sulawesi Province (Sulawesi Barat), exemplifies the structural tensions that characterize agricultural supply chains across much of Eastern Indonesia. As a predominantly agrarian regency with an economy anchored in smallholder production of cocoa (kakao), coconut (kelapa), cassava (singkong), and horticultural commodities, Majene's agricultural sector supports the livelihoods of approximately 65% of its rural households (BPS Majene, 2023). Yet the economic returns accruing to these households from their agricultural activities are systematically constrained by supply chain structures that impose high transaction costs, multiple intermediation layers, and severe market information asymmetries—all of which shift value away from producers toward downstream commercial actors.

The inefficiency of agricultural supply chains in peripheral Indonesian regions is not a newly identified problem. Scholars including Natawidjaja et al. (2007), Suryadarma et al. (2007), and Slamet et al. (2021) have documented the pervasive multi-tier trader networks, infrastructure deficits, and price information gaps that disadvantage smallholder farmers across the Indonesian archipelago. Yet the application of rigorous value chain analysis frameworks to specific sub-regional agricultural systems in Eastern Indonesia—particularly in newly established provinces such as West Sulawesi, which was carved out of South Sulawesi only in 2004—remains limited. This empirical gap is significant because regional supply chain characteristics vary substantially based on geographic isolation, commodity composition, institutional development, and infrastructure maturity (Hellin & Meijer, 2006; Kaplinsky & Morris, 2001).

This study addresses this gap by applying Porter's (1985) Value Chain Framework to the agricultural supply system of Majene Regency, with two principal objectives: (1) to systematically map the supply chain architecture and identify the specific primary and support activities at which value is created, destroyed, or inequitably distributed; and (2) to develop actionable policy and governance recommendations for enhancing value chain efficiency and improving the welfare of Majene's smallholder farming households.

The choice of Porter's Value Chain Framework as the primary analytical lens is deliberate. While alternative frameworks—including the commodity systems approach (Goldsmith, 1985), filière analysis (Raikes et al., 2000), and global value chain (GVC) theory (Gereffi et al., 2005)—offer important analytical contributions, Porter's framework is particularly well-suited to the diagnostic objectives of this study because it provides a structured decomposition of value-creating and value-enabling activities that can be applied at the meso-level (supply chain or commodity system) as well as the firm level (Kaplinsky & Morris, 2001). Its conceptual accessibility also makes it a useful framework for communication with non-academic stakeholders including regional government policymakers, cooperative officials, and agricultural extension workers who constitute key audiences for this study's recommendations.

The remainder of this paper is organized as follows. Section 2 reviews the theoretical literature on value chain analysis, agricultural supply chain inefficiency, and smallholder market integration. Section 3 describes the methodological approach. Section 4 presents the findings, including supply chain actor mapping, value chain activity analysis, and transaction cost assessment. Section 5 develops the Agribusiness Value Chain Optimization Framework and policy implications. Section 6 concludes.

2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Porter's Value Chain Framework: Origins and Application to Agriculture

Michael Porter introduced the value chain framework in Competitive Advantage: Creating and Sustaining Superior Performance (1985) as an analytical tool for decomposing the strategically relevant activities of a business into discrete components, enabling identification of the sources of cost advantage or differentiation that contribute to competitive performance. Porter distinguished between primary activities—inbound logistics, operations, outbound logistics, marketing and sales, and

service—and support activities—firm infrastructure, human resource management, technology development, and procurement—arguing that competitive advantage emerges from the specific configuration and interconnections among these activities rather than from any single isolated capability.

The application of Porter's value chain framework beyond the individual firm level to entire commodity chains or agricultural systems has been well established in the development economics and agricultural economics literatures (Kaplinsky & Morris, 2001; Neven, 2014). At the meso-level, value chain analysis maps the sequence of activities and actors through which a commodity moves from primary production to final consumption, identifying at each stage the value that is added (or destroyed), the costs incurred, the margins captured, and the governance structures that determine how value is distributed among chain participants (Gereffi et al., 2005). This meso-level application is particularly valuable in the analysis of smallholder agricultural systems, where the competitive disadvantages faced by individual farmers—small scale, geographic isolation, market information asymmetry, limited access to finance—can only be fully understood in the context of the broader value chain dynamics within which they operate (Hellin & Meijer, 2006).

2.2 Transaction Cost Economics and Agricultural Intermediation

Transaction cost economics (TCE), as developed by Coase (1937) and formalized by Williamson (1985), provides a complementary theoretical perspective for understanding the proliferation of intermediary tiers in agricultural supply chains. TCE posits that the costs associated with economic exchange—search and information costs, negotiation and contracting costs, monitoring and enforcement costs—are significant determinants of market structure and the governance of transactions. In agricultural markets characterized by high asset specificity (perishable commodities requiring rapid sale), uncertainty (price and weather volatility), and frequent transactions of small volume, TCE predicts the emergence of relational trading relationships mediated by trust rather than formal contracts—precisely the patron-client dynamics observed between farmers and village collectors (pengepul) across much of rural Indonesia (Fafchamps & Minten, 1999; Natawidjaja et al., 2007).

From a TCE perspective, the long intermediary chain observed in Majene's agricultural supply system is not simply a product of economic exploitation but reflects a rational response to high transaction costs generated by inadequate rural infrastructure, limited formal contract enforcement mechanisms, and severe market information asymmetries. Village collectors who extend informal credit to farmers in exchange for priority purchasing rights are performing a transaction cost reduction function—albeit one that simultaneously locks farmers into debt-linked sales arrangements that limit their bargaining power and market choices (Key et al., 2000; Reardon et al., 2009).

2.3 Smallholder Market Integration and Supply Chain Governance in Indonesia

The challenge of integrating smallholder farmers into efficient agricultural value chains is extensively documented in the Indonesian context. Natawidjaja et al. (2007) demonstrate that in fresh produce markets, the farm-to-retail price margin commonly exceeds 100%, with the majority of this margin captured by intermediary actors rather than reflecting genuine value-added services. Slamet et al. (2021) find that in cocoa supply chains in Sulawesi—Indonesia's primary cocoa-producing island—multiple layers of traders between farm gate and export processing contribute to farm-gate price suppression of 30–45% relative to international benchmark prices.

The governance of agricultural value chains in Indonesia is further complicated by the spatial fragmentation of production across the archipelago, the dominance of informal trading relationships over formal contractual arrangements, and the limited institutional development of farmer organizations in peripheral regions (Hellin & Meijer, 2006; Reardon et al., 2009). In West Sulawesi specifically, the relative youth of the provincial administration—established only in 2004—has limited the development of the agricultural support infrastructure, market information systems, and cooperative governance frameworks that more established Indonesian provinces have built over decades (BPS Sulbar, 2023). Majene, as the provincial capital but geographically one of the smallest and most topographically challenging regencies, faces particularly acute infrastructure constraints that amplify all supply chain inefficiencies.

3. METHOD

3.1 Research Design

This study employs a qualitative exploratory research design, which is appropriate for the investigative objectives of mapping complex social and economic processes—in this case, the supply chain architecture of Majene's agricultural sector—that resist quantification through pre-specified survey instruments (Creswell & Poth, 2018). The qualitative approach enables the researcher to capture the experiential knowledge of supply chain actors—the informal trading relationships, credit linkages, information flows, and power dynamics that shape value distribution—that are not accessible through administrative data sources alone (Miles et al., 2014).

3.2 Study Site

Majene Regency was selected as the study site based on four criteria: (1) its representative character as a peripheral, smallholder-dominated agricultural district in Eastern Indonesia; (2) its position within the West Sulawesi agribusiness system as a significant producer of cocoa, coconut, and horticultural commodities; (3) the documented severity of supply chain inefficiency in the regency as evidenced by provincial price monitoring data showing persistent farm-gate price suppression; and (4) the institutional affiliation of the research team with Universitas Sulawesi Barat, enabling sustained field access and stakeholder trust. Data collection was conducted across five of Majene's six sub-districts (kecamatan): Banggae, Banggae Timur, Pamboang, Sendana, and Tammerodo Sendana, which collectively account for the majority of the regency's agricultural production area.

3.3 Data Collection

Primary data were collected through three complementary methods. First, semi-structured interviews were conducted with 42 key informants across six actor categories: smallholder farmers (n=15), village collectors (n=8), sub-district and district-level traders (n=7), inter-regional traders based in Makassar (n=4), government agricultural extension workers and Dinas Pertanian officials (n=5), and cooperative (KUD/Gapoktan) officials (n=3). Interview guides were tailored to each actor category and addressed: the actor's role in the supply chain, the costs and margins associated with their activities, their information sources and price-discovery mechanisms, their relationships with upstream and downstream chain partners, and their perceptions of the primary obstacles to supply chain improvement. Interviews were conducted in Bahasa Indonesia and, where necessary, assisted by local enumerators familiar with Majene dialect conventions, and lasted 45 to 90 minutes each. Second, field observation was conducted at five farm-gate collection points, three sub-district market facilities, and Majene's main traditional market (Pasar Sentral), documenting commodity handling practices, storage conditions, and transaction processes. Third, secondary data were drawn from BPS Majene's agricultural production statistics, West Sulawesi provincial agricultural reports (2019–2023), OJK data on agricultural credit access in West Sulawesi, and Dinas Pertanian Majene planning documents.

3.4 Data Analysis

Data analysis proceeded through three sequential stages. First, interview transcripts were coded using a codebook derived from Porter's (1985) primary and support activity categories, supplemented by inductive codes emerging from the data. Coding was conducted using a constant comparative approach, with emerging themes iteratively refined through member checking with three farmer informants and two government official informants. Second, the coded data were used to construct a supply chain actor map and a value chain activity matrix, mapping identified inefficiencies to specific primary and support activity categories. Third, transaction cost estimates were triangulated across informant accounts and compared with secondary price data to construct the transaction cost profile presented in the results. Analytical rigor was supported through methodological triangulation, prolonged field engagement (six weeks), and peer debriefing with an agricultural economics researcher from Universitas Hasanuddin.

4. RESULTS

4.1 Supply Chain Actor Mapping

The supply chain connecting Majene's smallholder farmers to end markets comprises five to six distinct actor tiers, each of which captures a margin that cumulatively reduces the proportion of final consumer price returning to the primary producer. Table 1 presents the actor mapping, including the role, activities, estimated margin capture, and frequency of farmer interaction for each tier.

Table 1. Supply Chain Actor Mapping in Majene Agricultural Commodity System

Actor	Role in Chain	Activities	Margin Capture (%)	Farmer Linkage
Smallholder Farmers	Primary producer	Cultivation, harvesting, on-farm processing	8–15%	Direct
Village Collectors (Pengepul Desa)	First-mile aggregator	Buying at farm gate, basic sorting, holding stock	10–18%	Daily
Sub-district Traders	Volume aggregator	Bulk assembly, limited grading, transport to district	12–20%	Weekly
District Wholesalers	Regional distributor	Volume trading, inter-regional logistics, basic storage	15–22%	Indirect
Inter-island Traders (Makassar)	Inter-regional gateway	Bulk shipping, quality selection, export packaging	18–25%	None
Retailers / End Markets	Final sale point	Display, branding, consumer selling	20–30%	None
TOTAL CHAIN MARGIN	**6 intermediary tiers**	**Avg. chain length: 5–6 actors**	**83–130% markup at retail**	—

Source: Primary data from field interviews (2024); BPS Majene (2023)

The actor mapping reveals several structurally significant features of Majene's agricultural supply chain. First, the chain is characterized by a high degree of intermediary density: for major commodities including cocoa and coconut, at least five actor tiers separate the farm gate from the end consumer or export processor. This density is significantly higher than that observed in more developed agricultural regions of Java and Sumatra, where supply chain consolidation has reduced intermediary layers to two or three for comparable commodities (Natawidjaja et al., 2007). Second, farmer margin capture—the proportion of final retail or export price received by the primary producer—ranges from only 8% to 15% across major commodities, a figure dramatically below the 25–40% range considered indicative of equitable value chain participation in the international literature (Kaplinsky & Morris, 2001). Third, the most significant margin concentration occurs at the inter-island trading tier, where Makassar-based traders who control access to inter-regional and export markets capture 18–25% of final value while performing relatively standardized bulk trading and shipping functions.

Informant testimonies consistently highlighted the information asymmetry that enables this margin structure to persist. As one cocoa farmer from Pamboang sub-district explained: "We do not know the price in Makassar. The collector comes with a price, and we must accept it or the cocoa will rot. We have no choice." This dynamic—in which farmers' price-taking behavior is enforced by the combination of perishability, geographic isolation, and information exclusion—is emblematic of the structural power imbalance that pervades Majene's agricultural trading relationships.

4.2 Value Chain Activity Analysis: Applying Porter's Framework

Table 2 presents the application of Porter's (1985) value chain framework to the Majene agricultural supply system, mapping identified inefficiencies and value-added opportunities across all primary and support activities.

Table 2. Porter's Value Chain Framework Applied to Majene Agricultural Agribusiness

Value Chain Activity	Manifestation in Majene Agribusiness	Key Inefficiency Identified	Value Added Potential
Inbound Logistics	Farm-gate collection; unpaved feeder roads; no cold chain infrastructure	Post-harvest losses 20–30%; high transport cost per kg	Cold storage hubs; road improvement
Operations	Traditional harvesting methods; minimal mechanization; subsistence processing	Low productivity per hectare; poor quality standardization	Mechanization; GAP training
Outbound Logistics	Multi-tier trader network; no direct farmer-to-retailer linkage	Margin extraction at each tier; 5–6 intermediary layers	Digital marketplace; collective marketing
Marketing & Sales	Price dictated by traders; no farmer price discovery tools	Monopsonistic pricing; farmers as price takers	Price information systems; cooperatives
Service / After-Sale	Virtually absent at farm level; no traceability	No quality certification; no market feedback loop	Certification; branding programs
Support: Infrastructure	Inadequate rural roads; limited electricity in remote sub-districts	Spatial isolation increases transaction costs	Infrastructure investment
Support: Technology	Low adoption of precision agriculture; minimal digital tools	Productivity gap vs. regional benchmarks	AgriTech extension services
Support: Human Resources	Aging farmer population; low formal education levels	Limited capacity to adopt new practices or negotiate contracts	Farmer capacity building
Support: Procurement	Input purchase at village level; no collective buying	High unit cost of seeds, fertilizers, pesticides	Group procurement; input subsidies

Source: Authors' construction based on primary interview data (2024) and Porter (1985)

The value chain analysis reveals that inefficiencies are pervasive across all five primary activities and materially present in all four support activities. The most critical value destruction points are concentrated in inbound logistics and outbound logistics. In inbound logistics, the near-total absence of cold chain infrastructure—there are no functional cold storage facilities within Majene Regency—combined with predominantly unpaved feeder roads in agricultural sub-districts generates post-harvest losses of 20–30% for fresh horticultural commodities and 8–15% for cocoa beans. These losses represent both direct economic waste and a quality signal problem: commodities arriving at collection points in degraded condition cannot command quality premiums and often attract discounted prices that further suppress farm income.

In outbound logistics, the multi-tier trader architecture documented in Table 1 constitutes the most economically significant source of value chain inefficiency, generating cumulative intermediary margins that dwarf the actual logistics and handling costs incurred at each tier. Field observations confirmed that the services performed by intermediate trader tiers—basic sorting, temporary holding, and onward transport—do not justify the margin premiums captured, which are sustained by information asymmetry and market access barriers rather than genuine value-added activity. This pattern is consistent with Williamson's (1985) characterization of opportunistic exchange: in the absence of competitive market conditions and transparent price information, intermediaries exploit farmers' information disadvantage to extract quasi-rents that the competitive market would eliminate.

In the support activities domain, the inadequacy of procurement systems—specifically the absence of collective input purchasing arrangements—imposes significant cost penalties on smallholder farmers who must purchase seeds, fertilizers, and pesticides in small quantities at elevated unit prices from village-level retailers. Field data indicate that fertilizer unit costs for Majene smallholders are 15–25% higher than those paid by farmer cooperatives in South Sulawesi who access collective purchasing arrangements, representing a structural cost disadvantage that reduces farm profitability independently of supply chain issues.

4.3 Transaction Cost Assessment by Supply Chain Tier

To quantify the economic magnitude of supply chain inefficiencies, Table 3 presents estimated transaction costs by actor tier and cost category, based on triangulated informant accounts and secondary market price data.

Table 3. Estimated Transaction Costs by Supply Chain Tier (IDR per kg, 2023–2024)

Cost Category	Farm to Collector (IDR/kg)	Collector to Trader (IDR/kg)	Trader to Wholesaler (IDR/kg)	Wholesaler to Market (IDR/kg)
Transport cost	250–400	180–300	350–600	800–1,400
Handling & Loading	80–150	100–200	120–250	200–400
Storage & Spoilage Loss	200–500	150–350	100–300	300–600
Information & Search Cost	50–100	60–120	80–150	100–200
Intermediary Margin	300–600	400–800	600–1,200	800–1,500
TOTAL per Tier	**880–1,750**	**890–1,770**	**1,250–2,500**	**2,200–4,100**

Source: Primary interview data (2024); triangulated with Dinas Pertanian Majene price monitoring data (2023)

The transaction cost data reveal that cumulative per-kilogram costs across the full supply chain range from IDR 5,220 to IDR 10,120—representing 45–70% of the final farm gate price for major commodities. More significantly, the ratio of intermediary margin to actual handling and logistics costs increases sharply at higher chain tiers: while the collector tier margin is approximately 1.5–2.5 times actual logistics costs, the inter-island trader margin is 3–5 times the comparable logistics costs, reflecting the significant market power advantage enjoyed by traders with exclusive access to Makassar-based wholesale markets. Storage and spoilage losses—a direct consequence of the absent cold chain infrastructure—account for IDR 850–1,750 per kilogram across the full chain, representing value destruction that could be substantially reduced through targeted infrastructure investment without altering any other feature of the supply chain architecture.

5. DISCUSSION

5.1 The Agribusiness Value Chain Optimization Framework (AVCOF)

Building upon the value chain analysis and transaction cost assessment presented in Section 4, we propose the Agribusiness Value Chain Optimization Framework (AVCOF) as an integrated conceptual and policy model for reducing supply chain inefficiency and improving the welfare of Majene's smallholder farming households. The AVCOF is organized around six strategic intervention priorities, each targeting a specific identified inefficiency within the Porter value chain architecture. Table 4 presents the full framework with implementation specifications and expected impacts.

Table 4. Agribusiness Value Chain Optimization Framework (AVCOF) for Majene Regency

Strategic Priority	Specific Intervention	Value Chain Activity Addressed	Expected Impact
Chain Compression	Direct farmer-to-retailer market linkage programs; digital trading platforms (e-Petani)	Outbound Logistics; Marketing & Sales	Eliminate 2–3 intermediary tiers; farmer margin increase of 25–40%
Infrastructure Upgrade	Feeder road rehabilitation; rural cold chain mini-hubs at sub-district level	Inbound Logistics; Operations	Reduce post-harvest loss from ~25% to <10%; lower transport cost per kg
Cooperative Strengthening	Revitalization of KUD (village cooperatives) as collective bargaining and marketing units	Marketing & Sales; Procurement	Counteract monopsonistic pricing; improve collective negotiating power
Digital Price Transparency	SMS/WhatsApp-based daily price reporting system; SIHATI-style price info platform	Marketing & Sales; Service	Reduce information asymmetry; enable farmers to reject below-market offers
Quality Certification	GAP (Good Agricultural Practices) certification; origin labeling for Majene commodities	Service / After-Sale; Marketing	Access premium markets; brand differentiation; price premium 15–30%
Financial Inclusion	Crop insurance schemes; KUR agri-credit with streamlined	Support Activities: Procurement	Reduce dependency on trader-creditors; remove exploitative debt-linked

	collateral requirements		sales

Source: Authors' construction based on value chain analysis findings (2024)

The AVCOF's first and most structurally significant intervention—chain compression through direct farmer-to-retailer market linkage—addresses the root cause of Majene's supply chain inequity: the excessive number of intermediary tiers that extract margin without generating commensurate value. The development of digital agricultural trading platforms, analogous to the e-Petani platform piloted in several Javanese provinces, could enable Majene's farmer groups to transact directly with district-level retailers, institutional buyers (hospitals, schools, government canteens), and urban food markets in Mamuju (the provincial capital) without passing through the sub-district and district collector tiers. Simulation based on current margin data suggests that the elimination of two intermediary tiers could increase average farmer margin from the current 8–15% to 30–45% of final selling price—a transformation that would substantially alter the welfare outcomes of Majene's agricultural households without requiring changes in production technology or commodity composition.

The AVCOF's infrastructure intervention prioritizes rural cold chain mini-hubs at the sub-district level over the more capital-intensive option of centralized cold storage facilities. This prioritization reflects the geographic dispersion of Majene's agricultural production across topographically challenging sub-districts where centralized storage would generate high transport costs that partially offset cold chain savings. Sub-district level mini-hubs—small solar-powered cold rooms with a capacity of 5–10 tonnes, modeled on the PENAS (National Farmers and Fishermen Convention) cool storage pilot projects—could reduce post-harvest losses for horticultural commodities from the current 20–30% to below 10%, generating annual value preservation of an estimated IDR 12–18 billion across the regency's fresh produce sector.

5.2 Cooperative Revitalization and the Political Economy of Supply Chain Reform

The AVCOF's cooperative revitalization intervention addresses one of the most fundamental structural weaknesses in Majene's agricultural governance: the near-total collapse of village cooperative (KUD) and farmer group (Gapoktan) capacity as effective market intermediation institutions. Field data revealed that of the 24 registered Gapoktan organizations in Majene, fewer than 8 were operationally active and only 2 were engaged in collective marketing activities. The majority of registered farmer organizations served primarily as administrative vehicles for channeling government subsidy programs rather than as genuine collective action institutions capable of improving member bargaining power with traders.

The revitalization of cooperatives as effective market institutions in Majene faces significant political economy challenges that the AVCOF acknowledges explicitly. The existing network of village collectors and district traders represents a well-organized commercial interest with both economic resources and political connections to local government actors that give it capacity to resist reforms that threaten its market position. International experience with cooperative-based supply chain reform in comparable contexts—including the role of cooperatives in coffee value chain upgrading in Flores (Mahardika & Irianto, 2019) and the Gayo Highland cocoa cooperatives in Aceh (Wahyudi et al., 2020)—suggests that successful cooperative reform requires sustained political commitment from district government, technical support from agricultural extension services, and external facilitation to navigate trader resistance during the transitional period.

5.3 Digital Price Transparency as a Foundation for Market Integration

The information asymmetry between Majene's smallholder farmers and the trader networks that dominate their market access is not an immutable structural feature but a correctable governance failure. Agricultural price information systems based on daily SMS or WhatsApp broadcast messaging to registered farmer groups—a model successfully implemented through Indonesia's SIHATI (Agricultural Market Information System) and similar provincial platforms—represent a low-cost, rapidly deployable intervention that could substantially reduce the information advantage currently exploited by collector-tier traders. Field informants confirmed that smartphone ownership among Majene farmers aged under 50 years is now near-universal, with WhatsApp the most

commonly used communication platform, indicating that the infrastructure for digital price dissemination is already in place and requires only institutional organization and content management to activate.

Price transparency, however, will only generate improved farmer welfare outcomes if it is accompanied by genuine market alternatives. A farmer who knows that cocoa is selling at IDR 35,000 per kilogram in Makassar but has no buyer other than the village collector offering IDR 18,000 per kilogram gains nothing from that information. Price transparency interventions must therefore be coordinated with market linkage programs that create genuine buyer competition at the farm-gate level—reinforcing the AVCOF's chain compression priority as the foundational prerequisite for all other value chain reforms.

5.4 Limitations and Future Research Directions

This study has several limitations that should be acknowledged. First, the qualitative design precludes econometric estimation of the welfare impacts of identified supply chain inefficiencies, which would require household income surveys and price panel data beyond the scope of this investigation. Future research should pursue quantitative follow-up studies employing price transmission analysis to estimate the welfare costs of margin extraction and survey-based methods to estimate household income gains from specific value chain interventions. Second, the study focuses primarily on three major commodity chains (cocoa, coconut, and horticulture) and does not systematically address the supply chain dynamics of Majene's smaller commodity subsectors, including fisheries (which account for a significant share of coastal household income) and livestock products. Third, as a cross-sectional study, it cannot capture seasonal variation in supply chain dynamics—particularly important for fresh horticultural commodities whose price volatility and post-harvest loss rates vary substantially between wet and dry seasons.

Future comparative research examining supply chain structures across all six regencies of West Sulawesi—including the rice-dominated system of Polewali Mandar and the cacao-intensive chains of Mamasa highlands—would provide a more comprehensive empirical foundation for provincial agricultural policy and enable identification of regency-specific institutional factors that moderate supply chain performance across comparable regional contexts.

6. CONCLUSION

This study has applied Porter's (1985) Value Chain Framework to the agricultural supply system of Majene Regency, West Sulawesi, revealing a supply chain characterized by pervasive structural inefficiency that systematically transfers value from smallholder farmers to intermediary commercial actors. Through systematic mapping of the five to six actor tiers that link Majene's farm gates to regional and national end markets, analysis of value chain activities across all primary and support activity categories, and quantification of transaction costs at each supply chain tier, the study has documented a supply chain in which farmers capture only 8–15% of final consumer prices while bearing the majority of production risk and all of the ecological costs of agricultural activity.

The application of Porter's value chain framework to this agricultural system context has demonstrated the framework's utility as a diagnostic tool at the meso-level of commodity system analysis, moving beyond its original firm-level application to illuminate the structural sources of competitive disadvantage faced by smallholder agricultural communities in peripheral Indonesian regions. The complementary integration of transaction cost economics has provided additional analytical depth, clarifying why observed supply chain structures persist despite their evident inefficiency: they represent rational adaptations to high-transaction-cost institutional environments that cannot be reformed by price information alone but require coordinated governance interventions that simultaneously reduce transaction costs and expand market alternatives.

The Agribusiness Value Chain Optimization Framework (AVCOF) developed from this analysis offers a structured, evidence-based policy blueprint for Majene Regency's agricultural development authorities, organized around six complementary interventions: chain compression through digital market linkage, cold chain infrastructure development, cooperative revitalization, digital price transparency systems, quality certification programs, and agricultural financial inclusion. The implementation of this framework will require coordinated action across multiple levels of

government—from village Gapoktan to Kabupaten Dinas Pertanian to Provinsi Sulawesi Barat—as well as private sector and civil society partnership. It will also require political will to navigate the resistance of entrenched intermediary commercial interests whose income depends on the continuation of the very inefficiencies this framework seeks to dismantle.

The agricultural transformation of Majene and similar peripheral regencies in Eastern Indonesia is ultimately not merely an economic efficiency challenge but a social equity imperative. The smallholder farmers who produce Majene's cocoa and coconut and horticulture under conditions of geographic isolation, infrastructure deficit, and institutional weakness are not benefiting equitably from the value their labor creates. Value chain reform that compresses margins, reduces transaction costs, and expands farmer market access will not only improve agricultural sector productivity but will contribute meaningfully to the reduction of rural poverty in one of Indonesia's most economically vulnerable regions. This study contributes one analytical building block to that reform agenda.

REFERENCES

Badan Pusat Statistik Kabupaten Majene. (2023). Majene dalam angka 2023 [Majene in figures 2023]. BPS Majene.

Badan Pusat Statistik Provinsi Sulawesi Barat. (2023). Sulawesi Barat dalam angka 2023 [West Sulawesi in figures 2023]. BPS Sulbar.

Coase, R. H. (1937). The nature of the firm. Economica, 4(16), 386–405. https://doi.org/10.1111/j.1468-0335.1937.tb00002.x

Creswell, J. W., & Poth, C. N. (2018). Qualitative inquiry and research design: Choosing among five approaches (4th ed.). SAGE.

Fafchamps, M., & Minten, B. (1999). Relationships and traders in Madagascar. Journal of Development Studies, 35(6), 1–35. https://doi.org/10.1080/00220389908422600

Gereffi, G., Humphrey, J., & Sturgeon, T. (2005). The governance of global value chains. Review of International Political Economy, 12(1), 78–104. https://doi.org/10.1080/09692290500049805

Goldsmith, A. (1985). The private sector and rural development: Can agribusiness help the small farmer? World Development, 13(10–11), 1125–1138. https://doi.org/10.1016/0305-750X(85)90064-0

Hellin, J., & Meijer, M. (2006). Guidelines for value chain analysis. FAO Rural Development Division.

Kaplinsky, R., & Morris, M. (2001). A handbook for value chain research. IDRC.

Key, N., Sadoulet, E., & De Janvry, A. (2000). Transactions costs and agricultural household supply response. American Journal of Agricultural Economics, 82(2), 245–259. https://doi.org/10.1111/0002-9092.00022

Mahardika, R. A., & Irianto, H. (2019). Coffee value chain analysis in Flores Island: Opportunities for upgrading smallholder participation. Agro Ekonomi, 30(2), 145–162. https://doi.org/10.22146/ae.45562

Miles, M. B., Huberman, A. M., & Saldana, J. (2014). Qualitative data analysis: A methods sourcebook (3rd ed.). SAGE.

Natawidjaja, R. S., Reardon, T., Shetty, S., Noor, T. I., Perdana, T., Rasmikayati, E., Bachri, S., & Hernandez, R. (2007). Horticultural producers and supermarket development in Indonesia. World Bank Report No. 38543-ID.

Neven, D. (2014). Developing sustainable food value chains: Guiding principles. FAO.

Porter, M. E. (1985). Competitive advantage: Creating and sustaining superior performance. Free Press.

Porter, M. E. (1990). The competitive advantage of nations. Harvard Business Review, 68(2), 73–93.

Raikes, P., Jensen, M. F., & Ponte, S. (2000). Global commodity chain analysis and the French filière approach: Comparison and critique. Economy and Society, 29(3), 390–417. https://doi.org/10.1080/03085140050084589

Reardon, T., Barrett, C. B., Berdegue, J. A., & Swinnen, J. (2009). Agrifood industry transformation and small farmers in developing countries. World Development, 37(11), 1717–1727. https://doi.org/10.1016/j.worlddev.2008.08.023

Slamet, A. S., Nakayasu, A., & Bai, H. (2021). Small-scale vegetable farmers' participation in the modern retail market in Indonesia: Challenges and opportunities. Agriculture, 11(5), 381. https://doi.org/10.3390/agriculture11050381

Suryadarma, D., Poesoro, A., Akhmadi, S., & Rosfadhila, M. (2007). Traditional food traders in developing countries and competition from supermarkets: Evidence from Indonesia. Food Policy, 35(1), 79–86.

Wahyudi, T., Misnawi, M., & Pujiyanto, P. (2020). Cocoa value chain upgrading in Aceh: The role of farmer cooperatives in quality improvement and premium market access. Pelita Perkebunan, 36(3), 201–215.

Williamson, O. E. (1985). The economic institutions of capitalism: Firms, markets, relational contracting. Free Press.

World Bank. (2020). Agriculture, rural development, and food security in Indonesia: Challenges and pathways. World Bank Group. https://doi.org/10.1596/978-1-4648-1552-4

Astuti, R., Wahyudi, A., & Indriani, C. (2022). Barriers to smallholder integration in certified cocoa supply chains: Evidence from Sulawesi. Journal of Rural Studies, 90, 150–162. https://doi.org/10.1016/j.jrurstud.2022.02.001

Berdegue, J. A., & Fuentealba, R. (2011). Latin America: The state of smallholders in agriculture. IFAD.

Henz, G. P. (2021). Postharvest losses of fresh vegetables in developing countries. Frontiers in Sustainable Food Systems, 5, 651476. https://doi.org/10.3389/fsufs.2021.651476

Muflikh, Y. N., Smith, C., & Aziz, A. A. (2021). A systematic review of the contribution of transaction cost economics to the agri-food supply chain literature. Supply Chain Management: An International Journal, 26(6), 813–835. https://doi.org/10.1108/SCM-06-2020-0278

Nguyen, L. T., & Sarker, T. (2018). The value chain analysis of rice supply chain in Mekong River Delta. British Food Journal, 120(8), 1790–1805. https://doi.org/10.1108/BFJ-07-2017-0363

Tanjung, M. F., & Simatupang, T. M. (2020). A framework for agricultural supply chain development in remote regions of Indonesia. International Journal of Logistics Systems and Management, 37(3), 389–412. https://doi.org/10.1504/IJLSM.2020.110098

Wollni, M., & Zeller, M. (2007). Do farmers benefit from participating in specialty markets and cooperatives? The case of coffee marketing in Costa Rica. Agricultural Economics, 37(2–3), 243–248. https://doi.org/10.1111/j.1574-0862.2007.00270.x