HBR Husnayain Business Review

Vol.6 No.1, 2026
ISSN 2477-1368 (P)
ISSN: 2829-8039 (E)
pp. 94-107

https://journal.adpebi.com/index.php/hbr

How Cooperative Governance Improves Quality Consistency in Patchouli Essential Oil Value Chains

Mochammad Rafli Naseery[1], Pramesti Salsabil Putri Herjuno[2], Zainur Rijal[3], Ario S. Setiadi[4]
[1,2,3,4]Business Management Program, Management Department, BINUS Business School Master Program, Bina Nusantara University, Jakarta, Indonesia 11480
mochammad.naseery@binus.ac.id; pramesti.herjuno@binus.ac.id; zainur.rijal@binus.ac.id; ario.setiadi@binus.ac.id;

Received: 15 January 2026 Revised: 10 February 2026 Accepted:23 April 2026

DOI: https://doi.org/10.54099/hbr.v6i1.1736

ABSTRACT

Quality inconsistency in smallholder-based patchouli essential oil value chains persists despite technical interventions, suggesting that governance failure is the primary constraint. This study examines how cooperative governance improves quality consistency by functioning as a coordination authority in a quality-sensitive agricultural value chain. A qualitative case study was conducted with a patchouli essential oil cooperative in Legok, Indonesia. Data were collected through purposive and snowball-sampled semi-structured interviews with 12 key informants across three actor categories (cooperative managers, member farmers, and downstream buyers), supplemented by field observations and document analysis over four months. Thematic analysis following open coding, focused coding, and thematic synthesis identified three interlocking governance mechanisms. The key finding is that cooperative governance improves quality consistency by centralizing production standards, synchronizing harvesting and distillation processes, and embedding traceability as an internal accountability mechanism rather than a standalone technological tool. The study contributes to value chain governance and cooperative studies literature by demonstrating that quality upgrading in smallholder systems is fundamentally a governance outcome, with implications for cooperative management and agricultural development policy. **Keywords:** Cooperative governance; Quality consistency; Value chain; Traceability; Patchouli essential oil

JEL Classification: Q13, L14, D23, Q01

INTRODUCTION

Quality consistency has become a critical competitive requirement in global essential oil markets. Despite growing demand for stable chemical composition and process reliability, existing value chain arrangements in smallholder-based essential oil production remain structurally incapable of coordinating quality-determining processes. The global essential oil market has expanded rapidly, with patchouli oil among the most traded specialty oils due to its chemical stability and wide industrial applications (FAO, 2021). Yet despite this commercial significance, the sector continues to face persistent quality challenges that undermine market access and price stability for smallholder producers.

Indonesia is the world's leading producer of patchouli oil, supplying an estimated 80 to 90 percent of global demand, with the majority of production concentrated in smallholder farming systems in Aceh, Sulawesi, and Banten provinces (FAO, 2021). The strategic importance of this commodity to Indonesia's agricultural export sector is therefore considerable. However, Indonesia's supply dominance has not translated into market power due to persistent quality inconsistency, which undermines buyer confidence and limits access to premium markets. Reports from industry associations and export data consistently indicate that a substantial proportion of exported patchouli oil fails to meet buyer specifications for chemical purity and compositional consistency, resulting in price discounting, contract cancellations, and displacement by synthetic substitutes in some market segments.

The consequences of quality inconsistency extend beyond individual producers to affect the entire domestic value chain. When buyers cannot rely on consistent quality from smallholder sources, they either

HBR Husnayain Business Review
Vol.6 No.1, 2026
ISSN 2477-1368 (P)
ISSN: 2829-8039 (E)
pp. 94-107
https://journal.adpebi.com/index.php/hbr

impose lower prices as a quality risk premium, divert procurement to plantation-based or industrial producers capable of maintaining tighter processing control, or substitute natural patchouli oil with synthetic alternatives where formulation flexibility permits. This competitive dynamic creates a structural disadvantage for smallholder-based producers that cannot be addressed by individual farm-level technical improvements alone. The systemic nature of the quality problem therefore calls for systemic governance solutions.

In fragmented smallholder systems, cultivation, harvesting, and processing decisions are often made independently, resulting in weak alignment across value chain stages. This decentralized structure is fundamentally incompatible with the quality requirements of sophisticated downstream buyers, who demand batch-to-batch consistency in chemical composition—particularly in patchouli oil's key quality markers such as patchoulol content and the absence of contaminating compounds. When individual farmers control their own harvesting timing, post-harvest handling, and distillation parameters, quality variability across batches becomes structurally unavoidable.

Existing studies and development initiatives have largely framed this problem as a technical challenge, emphasizing improvements in cultivation practices, processing technologies, and certification schemes. However, this technical emphasis systematically overlooks the coordination failures that fundamentally shape quality outcomes in quality-sensitive agricultural markets. Technical knowledge about optimal harvesting maturity, for instance, cannot translate into consistent quality if farmers lack institutional incentives to align their decisions with collective production schedules. Similarly, improved distillation equipment cannot compensate for variability in raw material arising from unsynchronized harvesting across dozens of independent smallholders.

This study addresses this limitation by examining how cooperative governance reconfigures coordination authority to improve quality consistency in patchouli essential oil value chains. Rather than treating cooperatives as marketing intermediaries, the study conceptualizes cooperative governance as an institutional arrangement that centralizes decision-making over quality-determining processes. Drawing on a qualitative case study of a patchouli essential oil cooperative in Legok, Banten Province, Indonesia, the study analyzes how production standards, processing activities, and traceability are coordinated within cooperative governance structures. The research question guiding this study is: How does cooperative governance function as a coordination authority to improve quality consistency in smallholder-based patchouli essential oil value chains?

The remainder of the paper is structured as follows. The literature review develops the theoretical framing drawing on cooperative governance studies, value chain governance theory, and traceability literature, and positions the study in relation to competing theoretical frameworks. The methodology section describes the research design, sampling strategy, data collection procedures, and analytical approach. The results and discussion section presents empirical findings organized around three governance mechanisms, integrating interview evidence with theoretical interpretation. The conclusion summarizes contributions, limitations, and directions for future research.

LITERATURE REVIEW

Cooperative Governance and Coordination in Smallholder Value Chains

Cooperatives have long been promoted as institutional arrangements to address smallholder fragmentation and improve market access (Bernard & Spielman, 2009). In development economics and agricultural policy literature, the standard rationale for cooperative formation centers on aggregating smallholder output to achieve scale economies, reducing individual transaction costs, and providing collective bargaining leverage against intermediaries. In this framing, the cooperative's primary value lies in its role as a collective marketing organization that improves terms of trade for its members. However, this aggregation-focused conceptualization pays limited attention to how cooperative governance reallocates coordination authority over production and quality control processes. This assumption is particularly problematic in quality-sensitive agricultural markets, where coordination failures arise not from limited market access alone, but from the absence of enforceable authority over quality-determining activities across dispersed producers. Bijman et al. (2016) note that cooperative governance encompasses not only collective decision-making structures but also

HBR Husnayain Business Review
Vol.6 No.1, 2026
ISSN 2477-1368 (P)
ISSN: 2829-8039 (E)
pp. 94-107
https://journal.adpebi.com/index.php/hbr

the mechanisms through which cooperatives exercise authority over member behavior. Yet this authority dimension's function as a quality coordination mechanism has not been fully explored in the literature.

Recent work in cooperative studies has begun to recognize that cooperatives in quality-sensitive markets must assume a more active governance role. Iliopoulos and Cook (2020) argue that modern agricultural cooperatives increasingly function as value chain orchestrators, coordinating upstream production decisions to align with downstream market requirements. This perspective opens conceptual space for understanding cooperatives not as organizations that aggregate what members already produce, but as governance structures that actively shape what and how members produce. The present study builds on this emerging perspective by empirically examining the specific governance mechanisms through which cooperative authority translates into quality consistency outcomes.

The study also draws on recent literature examining the internal governance architecture of agricultural cooperatives, particularly the mechanisms by which cooperative boards and management establish, communicate, and enforce production rules among members. Cook and Iliopoulos (2016) identify that cooperatives operating in quality-sensitive markets often develop what they term 'authority hierarchies' that formally delegate decision-making power over production and processing to cooperative management, reducing member discretion in ways that enable quality standardization. This internal authority dimension distinguishes governance-oriented cooperatives from purely market-access cooperatives, and represents the organizational precondition for the quality coordination outcomes examined in this study.

Quality Consistency and Governance in Essential Oil Value Chains

Essential oil value chains are characterized by high sensitivity to quality variation, where competitiveness is shaped by consistency in chemical composition and process control rather than production volume alone (Aung & Chang, 2014). In the patchouli essential oil sector, quality outcomes are strongly influenced by cultivation practices, harvesting timing, post-harvest handling, and distillation processes. When these activities are managed independently by smallholders, achieving consistent quality across production batches becomes structurally difficult because no coordinating authority exists to enforce alignment across these interdependent stages (Bosona & Gebresenbet, 2013).

Existing interventions to address quality challenges have largely focused on technical upgrading, including improved cultivation techniques, distillation technologies, and certification schemes. While such interventions may enhance quality at the individual producer level, they often fail to address coordination problems that arise across production and processing stages (Trienekens, 2011). This is because technical solutions target individual actors, while quality consistency problems in smallholder systems are fundamentally relational—arising from the interactions among multiple actors whose decisions collectively determine the quality of the final product.

Humphrey and Schmitz (2002) demonstrate that in global value chains, quality upgrading typically requires not just technical capability building but also governance restructuring that changes how actors relate to one another and how authority over key processes is organized. In the patchouli value chain, achieving consistent quality therefore requires governance arrangements that coordinate behavior across the full production process—from cultivation through to final processing—rather than targeting individual technical bottlenecks in isolation.

Empirical evidence from comparable smallholder essential oil value chains in Southeast Asia and Sub-Saharan Africa supports this perspective. Studies of smallholder vanilla, clove, and ylang-ylang production systems have documented how quality failures consistently originate from coordination breakdowns across cultivation, harvesting, and post-harvest processing stages rather than from individual technical deficiencies (Neven et al., 2022). In each case, quality improvements were achieved not through the provision of better technology but through governance restructuring that established clear authority over production decisions, created monitoring mechanisms, and aligned farmer incentives with collective quality standards. The patchouli sector in Indonesia, while exhibiting commodity-specific characteristics, shares the fundamental structural features that make governance-based interventions particularly relevant.

HBR Husnayain Business Review
Vol.6 No.1, 2026
ISSN 2477-1368 (P)
ISSN: 2829-8039 (E)
pp. 94-107
https://journal.adpebi.com/index.php/hbr

Traceability as a Governance Mechanism

Most existing literature conceptualizes traceability primarily as a technological solution to information asymmetry, emphasizing data recording systems and digital platforms that allow downstream actors to verify the origin and handling history of agricultural products (World Bank, 2023). In this framing, traceability is valued primarily as a market signal: a means by which producers can credibly communicate quality and safety characteristics to buyers who cannot directly observe production conditions.

However, this market-signaling perspective overlooks the governance functions that traceability can serve within production systems. Bosona and Gebresenbet (2013) argue that traceability is most effective when integrated into comprehensive supply chain management systems, but their analysis focuses primarily on the information logistics dimension rather than the authority and enforcement dimensions. Without governance arrangements that embed traceability within rule-setting, monitoring, and enforcement mechanisms, traceability remains a weak coordination tool in fragmented smallholder contexts—generating information about quality variation without providing the institutional basis for acting on that information.

Reardon and Farina (2002) show that private standards and quality assurance systems in agrifood value chains are most effective when backed by organizational authority capable of monitoring compliance and imposing consequences for non-compliance. This insight suggests that traceability's effectiveness as a quality governance tool depends critically on the organizational context in which it is deployed. In the cooperative context, the capacity to monitor member behavior and enforce collective standards may transform traceability from a passive information system into an active governance mechanism.

Competing Theoretical Frameworks and Conceptual Gap

The governance of quality-sensitive agricultural value chains has been examined through several theoretical frameworks, each offering partial insights. Transaction Cost Economics (TCE) emphasizes that governance structures—whether market, hybrid, or hierarchical—are selected to minimize transaction costs associated with uncertainty, asset specificity, and opportunism (Williamson, 1985). From a TCE perspective, quality inconsistency in smallholder value chains reflects high measurement costs and behavioral uncertainty that market-based coordination cannot efficiently address. However, TCE's primary unit of analysis is the bilateral transaction, limiting its capacity to capture the multi-actor coordination challenges characteristic of smallholder production systems.

Global Value Chain (GVC) governance theory (Gereffi et al., 2005) identifies how lead firms govern supplier behavior through combinations of market signals, explicit standards, relational mechanisms, captive arrangements, and direct hierarchical control. GVC theory has been productively applied to understanding quality upgrading as smallholder producers integrate into quality-sensitive global chains. However, it has been criticized for its buyer-centric perspective, which locates governance agency primarily with downstream lead firms and underestimates the potential for producer-side institutional arrangements to actively shape chain governance (Ponte & Sturgeon, 2014).

Institutional theory, drawing on DiMaggio and Powell (1983), highlights how organizational practices adopt forms that confer legitimacy within institutional environments. From this perspective, cooperative governance and traceability adoption may be understood as responses to institutional pressures from buyers, certifiers, and regulatory bodies. While usefully contextualizing governance choices within broader institutional environments, this perspective risks overemphasizing isomorphic conformity at the expense of explaining how governance arrangements actually function to produce quality outcomes.

Taken together, the literature suggests that cooperatives, quality upgrading, and traceability have been examined as separate mechanisms within smallholder value chains (Gereffi et al., 2005; Bijman et al., 2016). What remains underexplored is how cooperative governance integrates traceability to function as a coordination authority capable of improving quality consistency in quality-sensitive agricultural markets. This study addresses this gap by examining cooperative governance as an institutional mechanism that reallocates coordination authority and shapes quality outcomes, extending and challenging existing theoretical frameworks through empirical analysis. Table 1 summarizes the theoretical positioning of this study.

HBR Husnayain Business Review
Vol.6 No.1, 2026
ISSN 2477-1368 (P)
ISSN: 2829-8039 (E)
pp. 94-107
https://journal.adpebi.com/index.php/hbr

Table 1. Theoretical Frameworks and Contribution of This Study

Theoretical Framework	Core Claim	Contribution of This Study
Transaction Cost Economics (Williamson, 1985)	Governance structures minimize transaction costs through hierarchy, market, or hybrid arrangements	Extends TCE by showing cooperative governance reduces quality transaction costs through internalized authority, not merely price coordination
Global Value Chain Governance (Gereffi et al., 2005)	Governance typologies shape upgrading trajectories; authority typically resides with lead firms	Demonstrates producer-side cooperative governance can function as quasi-hierarchical authority, enabling relational-to-hierarchical transition internally
Institutional Theory (DiMaggio & Powell, 1983)	Organizations adopt practices conferring legitimacy within institutional environments	Shows institutional embedding transforms traceability from legitimacy device into operational governance mechanism
Cooperative Studies (Bijman et al., 2016)	Cooperatives primarily serve as market access and aggregation vehicles for smallholders	Reframes cooperatives as active coordination authorities that reconfigure production behavior through rule-setting and enforcement

Source: Author's compilation

METHOD

RESEARCH DESIGN AND APPROACH

This study adopts a qualitative case study approach to examine how cooperative governance functions as a coordination authority in a quality-sensitive agricultural value chain. A qualitative case study approach enables in-depth examination of governance mechanisms within their real-world institutional context (Yin, 2014). Case study research is particularly suited to "how" questions that seek to understand causal mechanisms rather than simply document statistical associations, aligning well with the research question guiding this study.

The empirical focus is a patchouli essential oil cooperative in Legok, Banten Province, Indonesia, that integrates production standardization, centralized distillation, and traceability practices within its governance structure. This case was selected through purposive theoretical sampling on the basis of three criteria. First, the cooperative had implemented explicit governance mechanisms for quality coordination spanning cultivation, harvesting, and processing stages, making it a particularly information-rich case for examining governance mechanisms in practice. Second, the cooperative maintained established relationships with downstream buyers imposing explicit quality specifications, creating external pressure that activated the cooperative's quality governance functions. Third, the cooperative's operational context—smallholder-based, commodity-specific, quality-sensitive—represents a theoretically significant type of agricultural value chain with broad empirical relevance across developing country agricultural sectors.

Sampling Strategy and Informant Selection

Informants were selected using purposive sampling based on informational adequacy (Patton, 2015). This strategy was supplemented by snowball referral to access additional member farmers whose experiences

HBR Husnayain Business Review
Vol.6 No.1, 2026
ISSN 2477-1368 (P)
ISSN: 2829-8039 (E)
pp. 94-107
https://journal.adpebi.com/index.php/hbr

could provide variation in perspectives on governance enforcement and compliance. A total of 12 key informants were interviewed, comprising four cooperative managers responsible for production coordination and quality oversight, five member farmers with varying levels of engagement with cooperative protocols, and three downstream buyers engaged in quality assessment and procurement decisions.

The informant sample composition was designed to capture governance arrangements from multiple positional perspectives within the value chain. Cooperative managers provided perspectives on governance design, rule-setting, and enforcement mechanisms. Member farmers offered ground-level insight into how governance rules were experienced, interpreted, and complied with in practice. Downstream buyers contributed perspectives on how cooperative governance influenced quality perceptions and procurement relationships. This triangulation of informant categories strengthens the analytical validity of the findings by enabling cross-validation across actor positions.

Data Collection

Data were collected through three complementary methods: semi-structured interviews, field observations, and document analysis, conducted over approximately four months of field engagement. The primary data source was semi-structured interviews guided by a protocol organized around four thematic areas: (1) perceptions of quality challenges in patchouli production; (2) the role of the cooperative in coordinating production and processing activities; (3) specific governance mechanisms related to standardization, monitoring, and enforcement; and (4) the use and function of traceability within the cooperative's operations. Interview questions were open-ended to allow informants to elaborate on their experiences and perspectives, with probing questions used to explore emerging themes in depth. Interviews were conducted in Bahasa Indonesia, recorded with informant consent, and transcribed verbatim.

Field observations were conducted during cooperative meetings, harvesting activities, and distillation sessions. Observations focused on how governance rules were communicated and enforced in practice, how quality assessments were conducted, and how traceability documentation was recorded and used. Document analysis encompassed internal cooperative governance documents including production guidelines, harvesting protocols, quality assessment records, traceability documentation, and meeting minutes, as well as external documents including buyer contracts and industry certification requirements. An overview of the research design and data sources is provided in Table 2.

The field observation component was guided by a structured observation protocol focused on four dimensions of cooperative governance in practice: (1) how governance rules were communicated to member farmers during cooperative meetings and field visits; (2) how quality standards were applied and assessed during harvesting and at the point of delivery to the distillation facility; (3) how distillation processes were monitored and controlled by cooperative staff; and (4) how traceability records were created, maintained, and used in governance interactions with both members and buyers. Field notes were recorded immediately following observation sessions and subsequently integrated into the overall data corpus for thematic analysis. The combination of interview, observation, and document data enabled methodological triangulation, strengthening the credibility of findings by cross-validating evidence across multiple data sources (Yin, 2014). Data collection was conducted until thematic saturation was reached, at which point no substantially new insights regarding governance mechanisms and quality coordination emerged from additional interviews.

Table 2. Research Design and Data Sources

Component	Description
Research approach	Qualitative case study
Study context	Patchouli essential oil cooperative, Legok, Banten Province, Indonesia
Unit of analysis	Cooperative governance mechanisms

HBR Husnayain Business Review
Vol.6 No.1, 2026
ISSN 2477-1368 (P)
ISSN: 2829-8039 (E)
pp. 94-107
https://journal.adpebi.com/index.php/hbr

Key informants	12 informants: 4 cooperative managers, 5 member farmers, 3 downstream buyers
Sampling strategy	Purposive sampling (informational adequacy); snowball referral for farmers
Data collection	Semi-structured interviews, field observations, document analysis
Duration	Approximately four months of field engagement
Analytical strategy	Thematic analysis: open coding → focused coding → thematic synthesis (Braun & Clarke, 2006)
Trustworthiness	Credibility (member-checking), transferability (thick description), dependability (audit trail), confirmability (reflexivity)

Source: Author's compilation

Data Analysis

The analysis was conducted iteratively, moving back and forth between empirical data and emerging theoretical interpretations to refine categories and ensure conceptual coherence. Data analysis followed a systematic thematic analytical strategy inspired by Braun and Clarke (2006), adapted to align with the conceptual focus on governance mechanisms. Coding was conducted manually, with codes and categories organized using structured coding tables in Microsoft Word to track analytical decisions systematically across transcripts and field notes. Interview transcripts and field notes were analyzed through three sequential coding stages. In the first stage (open coding), transcripts were reviewed line-by-line to identify instances of governance-relevant phenomena including rules, authority relationships, compliance behaviors, quality assessments, and traceability practices. In the second stage (focused coding), initial codes were grouped into categories based on functional similarities and conceptual relationships. In the third stage (thematic synthesis), categories were organized into overarching themes capturing the governance logic of the cooperative's quality coordination mechanisms.

To ensure the trustworthiness of the analysis, four validity criteria were addressed. Credibility was pursued through member-checking, in which selected cooperative managers reviewed preliminary interpretations and confirmed the accuracy of governance descriptions. Transferability was addressed through thick description of the case context, governance mechanisms, and institutional environment, enabling readers to assess the applicability of findings to comparable contexts. Dependability was strengthened through maintenance of a detailed audit trail documenting coding decisions and analytical choices at each stage of analysis. Confirmability was addressed through systematic researcher reflexivity. The researchers had no formal affiliation with the cooperative, which helped minimize potential bias during data collection. The research team members are affiliated with a business management program and bring prior theoretical knowledge of cooperative governance and value chain frameworks, which informed the interview protocol and analytical categories. To mitigate the risk of confirmation bias, the team actively sought disconfirming evidence during coding, cross-validated interpretations across informant categories, and documented instances where emerging findings diverged from initial theoretical expectations. Regular analytical discussions among team members were used to challenge and refine interpretations before finalizing themes.

RESULTS AND DISCUSSION

Coordination Failures in Smallholder-Based Patchouli Production

HBR Husnayain Business Review
Vol.6 No.1, 2026
ISSN 2477-1368 (P)
ISSN: 2829-8039 (E)
pp. 94-107
https://journal.adpebi.com/index.php/hbr

Findings indicate that quality inconsistency is driven primarily by coordination failures rather than technical limitations. Prior to cooperative governance intervention, fragmented cultivation practices, unsynchronized harvesting schedules, and individually managed distillation processes resulted in significant variability in oil quality across production batches. Although farmers possessed basic knowledge of recommended practices, the absence of a coordinating authority meant that compliance with quality standards remained voluntary and highly uneven.

Interview evidence from cooperative managers highlights the structural nature of this coordination problem. One manager described the pre-cooperative situation in the following terms:

"Before we formalized the production guidelines, every farmer had their own way of doing things. Some would harvest too early to get cash quickly, others would distill at home using their own equipment with different settings. When we collected the oil, the quality was all over the place. Buyers started complaining, and we were losing contracts."

This suggests that quality inconsistency reflects structural coordination failure rather than a knowledge deficit. Farmers understood, in principle, what good practice looked like, but individual economic incentives—such as the short-term benefit of early harvesting to obtain immediate income—created systematic divergence from collectively optimal behavior. This finding is consistent with TCE perspectives on governance managing behavioral uncertainty (Williamson, 1985), but extends this insight by showing that the relevant governance failure operated at the collective production system level, not merely at the level of bilateral buyer-seller transactions.

Member farmer interviews provided additional evidence of how coordination failures manifested in practice. One farmer explained:

"When I distilled at home, I could decide when to stop. I thought I knew when it was ready. But when the cooperative started running the distillation together, I could see that my oil was different from the others. The cooperative manager showed us the quality records. I realized that my timing had been off."

This account reveals two important governance dynamics. First, it demonstrates that individual farmers' self-assessed quality judgments were systematically biased by the absence of comparative reference points—a form of information asymmetry that cooperative governance addressed through collective processing and shared quality assessment. Second, it illustrates how traceability documentation created accountability mechanisms that surfaced individual-level variance in a form that was visible and actionable within the collective governance structure.

Downstream buyer interviews confirmed that quality inconsistency was the principal obstacle to deepening market relationships. One buyer representative stated:

" With traceability in place, we are not just buying oil—we are buying a process we can understand. It reduces uncertainty because we know how the product was handled at every stage."

These findings align with value chain governance literature: in quality-sensitive markets, upgrading stalls when production and processing decisions remain weakly aligned across actors (Humphrey & Schmitz, 2002). Quality inconsistency is therefore a governance problem—rooted in the absence of coordinating authority, not in a lack of technical knowledge.

Further corroboration came from cooperative document analysis, which revealed that prior to the introduction of formal governance protocols, quality assessment records showed batch-to-batch variation in patchoulol content ranging widely enough to render some batches unsuitable for premium fragrance applications. Internal cooperative reports noted that buyer complaints citing inconsistent quality were the primary trigger for governance restructuring, underscoring how market pressure from downstream buyers catalyzed the shift toward a more authoritative cooperative governance model. This pattern aligns with GVC theory's account of how quality requirements imposed by lead firms can drive governance upgrading in supplier-side organizations (Gereffi et al., 2005), while also demonstrating that the upgrading response in this case was organized through a producer-side institution rather than through buyer-imposed vertical integration.

Cooperative Governance as a Coordination Authority

HBR Husnayain Business Review
Vol.6 No.1, 2026
ISSN 2477-1368 (P)
ISSN: 2829-8039 (E)
pp. 94-107
https://journal.adpebi.com/index.php/hbr

The introduction of cooperative governance fundamentally altered how coordination was organized within the value chain. Rather than functioning solely as a marketing intermediary, the cooperative operated as a coordination authority that centralized decision-making over production standards and processing activities. Cultivation guidelines were formalized into written protocols specifying planting density, fertilization schedules, integrated pest management practices, and leaf harvesting criteria. Harvesting schedules were synchronized to ensure that distillation batches drew from material at comparable maturity stages. Distillation was centralized under cooperative management, standardizing processing parameters including temperature profiles, steam pressure settings, and distillation duration.

A cooperative manager described the governance logic underlying these arrangements:

> *"We realized that if we wanted to sell quality oil, we had to control the whole process, not just collect what farmers brought us. So we made rules. If you are a member, you follow our harvesting schedule, you bring your leaves to our distillation facility, and we process together. It is not optional."*

This account highlights the coercive dimension of cooperative governance—the fact that coordination was achieved not merely through information provision or financial incentives, but through the exercise of institutional authority backed by membership obligations. This finding extends cooperative literature by demonstrating that cooperatives can actively shape production behavior through rule-setting and enforcement, rather than merely facilitating collective sales (Bijman et al., 2016). The cooperative's governance capacity in this respect resembles what GVC theory describes as captive governance relationships (Gereffi et al., 2005), but operating upward—with the cooperative exercising authority over its members rather than a lead firm exercising authority over its suppliers.

Centralized distillation emerged as a particularly important governance mechanism. By standardizing the processing stage, the cooperative eliminated the largest single source of quality variability in the previous system. Under centralized cooperative management, processing parameters were standardized and monitored by trained cooperative staff, producing consistency across batches that had not previously been achievable at the individual farm level. From a TCE perspective (Williamson, 1985), this represents a shift from market-based coordination toward a hybrid or quasi-hierarchical arrangement in which the cooperative internalized the processing stage, reducing quality-related transaction costs by bringing the most measurement-sensitive stage of production under direct cooperative control.

Beyond distillation, the cooperative's governance authority also extended to pre-processing quality controls at the point of raw material delivery. Member farmers delivering patchouli leaves to the cooperative facility were required to meet minimum maturity and cleanliness standards, which cooperative staff assessed before accepting deliveries. Batches failing to meet these standards were either returned to farmers for remediation or accepted at a reduced price, creating a direct financial incentive for compliance with pre-harvest protocols. This quality gatekeeping function at the delivery stage represents an additional governance layer that reinforced upstream compliance with cultivation and harvesting standards. One cooperative manager elaborated on the rationale:

> *"If we accept everything without checking, farmers have no reason to follow our guidelines. But when we refuse a substandard delivery or reduce the price, the word spreads quickly. Other farmers see what happens, and they take the guidelines more seriously."*

This account illustrates how governance authority was exercised not only through formal rule-setting but also through pricing mechanisms that created reputational and financial consequences for non-compliance. The combination of formal rules, monitoring, and differential pricing constitutes a layered governance architecture that aligned individual farmer incentives with collective quality objectives in a manner consistent with hybrid governance theory (Williamson, 1985).

Traceability Embedded within Cooperative Governance

HBR Husnayain Business Review
Vol.6 No.1, 2026
ISSN 2477-1368 (P)
ISSN: 2829-8039 (E)
pp. 94-107
https://journal.adpebi.com/index.php/hbr

Traceability played a complementary role in reinforcing cooperative governance. Rather than operating as an external transparency tool aimed solely at buyers, traceability functioned as an internal governance mechanism that strengthened accountability within the cooperative structure. Batch-level documentation enabled the cooperative to link quality outcomes to specific cultivation and processing practices, creating feedback loops that supported monitoring and corrective action.

A cooperative manager described the internal governance function of traceability:

> *"Every batch has a record. We know which farmers contributed, which field plots, what harvesting date, what the distillation parameters were. If there is a quality problem with a batch, we can trace it back immediately. We know who was responsible. And then we talk to that farmer, understand what happened, and make corrections."*

This account illustrates how traceability documentation transformed from a market-facing credential into an operational management tool. The capacity to attribute quality outcomes to specific actors and practices created accountability structures that reinforced compliance with cooperative production standards. This finding challenges technology-centric views of traceability (World Bank, 2023) by showing that its governance function is contingent on organizational arrangements possessing monitoring and enforcement capacity. Traceability data without institutional authority to act on that data provides limited governance benefit; it is the embedding of traceability within cooperative authority structures that generates its accountability effects.

This finding resonates with institutional theory perspectives on how organizational practices acquire governance functions through institutional embedding (DiMaggio & Powell, 1983). In the cooperative context, traceability moved beyond being a legitimacy-conferring mechanism to becoming an operational governance tool integrated into the cooperative's internal monitoring and enforcement routines. Member farmers acknowledged this accountability effect, with one farmer noting:

> *"I know that what I do in my field will be recorded and connected to the quality of the oil. If there is a problem, the cooperative will know it was from my plot. That makes me more careful. I follow the guidelines more strictly because I know there will be a record."*

This self-reported behavioral response demonstrates traceability functioning not merely as a post-hoc documentation system but as a prospective behavioral constraint that shaped farmer decision-making during production. This anticipatory compliance effect represents a governance mechanism operating through information and accountability rather than direct supervision, extending the cooperative's effective governance reach beyond what direct monitoring alone could achieve.

The traceability system also generated important downstream governance effects by transforming how buyers engaged with the cooperative. Prior to traceability implementation, buyers relied on batch-level chemical analysis as the primary quality verification mechanism, with no capacity to assess the production conditions underlying observed quality outcomes. Following traceability implementation, buyers could access information about production origin, harvesting dates, and processing parameters for each batch, enabling them to make more informed procurement decisions and to provide targeted quality feedback to the cooperative. One buyer described this shift:

> *"Before working with the cooperative, we always had to test and re-test each batch. Now, with consistent documentation and processes, we can rely more on their internal controls, which makes procurement more efficient for us."*

This account reveals that traceability-enabled transparency altered the relational character of the buyer-cooperative relationship, shifting it from a transactional interaction based solely on batch inspection toward a more collaborative governance relationship in which quality problems could be diagnosed, communicated, and systematically addressed. This relational dimension of traceability's governance function extends existing

HBR Husnayain Business Review
Vol.6 No.1, 2026
ISSN 2477-1368 (P)
ISSN: 2829-8039 (E)
pp. 94-107
https://journal.adpebi.com/index.php/hbr

literature by demonstrating that traceability can reshape inter-organizational relationships within value chains, not merely serve as an internal compliance monitoring tool.

Governance Mechanisms and Quality Consistency

Taken together, the findings demonstrate that quality consistency was achieved through the interaction of multiple governance mechanisms rather than isolated interventions. Cooperative governance addressed key coordination challenges by standardizing production practices, centralizing processing, and embedding traceability within internal control systems. These mechanisms operated in a mutually reinforcing way: production standardization established behavioral expectations; centralized distillation enforced compliance at the critical processing stage; and traceability created accountability structures that motivated compliance and enabled corrective action. Table 3 summarizes the main coordination challenges and corresponding cooperative governance mechanisms.

Table 3. Coordination Challenges and Cooperative Governance Mechanisms in the Patchouli Value Chain

Coordination Challenge	Cooperative Governance Mechanism	Quality Outcome
Fragmented cultivation practices	Standardized production guidelines (planting density, input protocols, IPM standards)	Reduced variability in raw material quality
Unsynchronized harvesting activities	Coordinated harvesting schedules with designated collection windows	Consistent leaf maturity at processing stage
Inconsistent distillation outcomes	Centralized distillation under cooperative management; standardized processing parameters	Uniform oil composition across batches
Limited accountability for quality variation	Internal batch-level traceability linking outputs to specific inputs, plots, and handling practices	Traceable quality failure attribution and corrective action
Weak bargaining position with buyers	Collective marketing, consolidated documentation, coordinated negotiation	Improved market access and price stability

Source: Author's analysis

Discussion: Implications for Value Chain Governance

The findings contribute by reframing cooperatives as coordination authorities rather than passive intermediaries. By centralizing authority over quality-determining processes, cooperative governance facilitates a shift from market-based toward rule-based internal coordination. This shift reduces quality variability and reshapes power relations within the value chain, strengthening the cooperative's bargaining position with downstream buyers—consistent with recent empirical work on cooperative upgrading in quality-sensitive markets (Iliopoulos & Cook, 2020).

The study's engagement with GVC governance theory reveals a productive tension between buyer-centric governance frameworks and the producer-side governance dynamics observed in this case. GVC theory predicts that quality governance authority in buyer-driven chains resides primarily with lead firms (Gereffi et al., 2005). The findings from the Legok cooperative suggest, however, that producer-side organizations can develop governance capacities that effectively internalize quality coordination functions, reducing dependence on buyer-imposed governance and enabling a more equitable distribution of governance authority

Vol.6 No.1, 2026
ISSN 2477-1368 (P)
ISSN: 2829-8039 (E)
pp. 94-107

https://journal.adpebi.com/index.php/hbr

within the chain. This suggests that governance capacity enhances cooperative competitiveness in quality-sensitive markets.

The study's treatment of traceability as a governance mechanism rather than a technological tool also has practical implications for how traceability investments are designed and evaluated. If traceability's effectiveness depends on institutional embedding rather than technical sophistication, then investments should prioritize organizational capacity—governance rules, monitoring protocols, and enforcement mechanisms—before or alongside investments in digital platforms and data recording systems. This reinforces critiques of technology-led agricultural development that assume providing technical tools will automatically generate governance improvements (Reardon & Farina, 2002).

From a managerial perspective, cooperative managers seeking to improve quality consistency should focus on developing governance mechanisms that create enforceable collective authority over production decisions, rather than relying primarily on farmer training or equipment upgrades. For policymakers, the results underscore the importance of supporting cooperative governance capacities through investments in cooperative institutional development, management training, and legal frameworks that clarify cooperatives' authority over member production behavior.

At the broader development policy level, the findings challenge the prevailing logic of agricultural quality improvement programs that channel investment primarily into technology dissemination, certification training, and processing equipment. While such investments may be necessary conditions for quality improvement, they are insufficient without accompanying governance infrastructure that can enforce standards, coordinate behavior, and sustain accountability across the value chain. Development agencies and government programs targeting quality upgrading in smallholder-based agricultural value chains would benefit from incorporating cooperative governance strengthening as a central program component, rather than treating it as a secondary concern after technical capacity has been addressed. This implies support for cooperative management training, governance systems design, legal framework development, and the creation of peer learning networks through which cooperatives in quality-sensitive markets can share governance innovation and implementation experience.

CONCLUSION

This study contributes theoretically to agribusiness and value chain governance literature by explicitly reconceptualizing cooperative governance as a coordination authority rather than merely a market intermediary. The findings demonstrate that quality consistency is primarily shaped by governance arrangements that centralize authority over quality-determining processes, rather than by technical interventions alone. By reallocating decision-making power over production standards, harvesting schedules, and distillation processes, cooperative governance reduces coordination failures and stabilizes quality outcomes across production batches.

The study further advances existing perspectives on traceability by showing that traceability systems are most effective when embedded within governance structures that possess rule-setting and enforcement capacity. In this configuration, traceability functions as an internal governance device that strengthens accountability, monitoring, and continuous quality control, rather than as a standalone technological transparency tool. This challenges technology-centric views of traceability and highlights the importance of organizational embedding.

The engagement with competing theoretical frameworks—Transaction Cost Economics, Global Value Chain governance theory, and institutional theory—enriches the theoretical contribution by situating empirical findings within a broader landscape of governance perspectives. The findings extend TCE by demonstrating how quasi-hierarchical governance emerges through cooperative internalization of quality-sensitive processes. They challenge buyer-centric assumptions in GVC theory by showing that producer-side organizations can develop effective governance authority. And they extend institutional theory by demonstrating how practices adopted for legitimacy purposes can evolve into operational governance mechanisms through institutional embedding.

Vol.6 No.1, 2026
ISSN 2477-1368 (P)
ISSN: 2829-8039 (E)
pp. 94-107

https://journal.adpebi.com/index.php/hbr

This study is subject to certain limitations. As a single qualitative case study, the findings are analytically rather than statistically generalizable (Yin, 2014). Specifically, the findings are analytically generalizable to smallholder-based, quality-sensitive agricultural value chains characterized by fragmented production structures and high interdependence between production stages. In such contexts, governance arrangements that centralize coordination authority are likely to play a critical role in achieving quality consistency. And the observed governance mechanisms reflect the specific institutional context, commodity characteristics, and organizational history of the studied cooperative. Future research could extend this analysis by examining comparative cases across different commodities, cooperative maturity levels, or regional institutional environments to assess how variations in cooperative governance structures influence quality upgrading in smallholder-based value chains. Mixed-method research designs incorporating survey data across multiple cooperatives could also assess the generalizability of the governance mechanisms identified in this study.

Additional avenues for future research include examining the dynamic dimensions of cooperative governance evolution over time. The present study captures governance mechanisms at a particular stage of cooperative institutional development; longitudinal research examining how governance arrangements change as cooperatives mature, as market conditions shift, or as buyer requirements evolve would add important temporal depth to the analysis. Research on the distributional effects of cooperative governance mechanisms within member communities would also be valuable: while this study documents quality and market access improvements at the cooperative level, the extent to which governance-driven quality upgrading benefits all members equitably—or whether it disproportionately advantages larger or more resource-endowed farmers who can more easily comply with production standards—remains an important open question. Finally, comparative research examining how cooperative governance interacts with national agricultural policy frameworks and regional institutional environments across different producing countries would contribute to building a more generalizable theory of cooperative governance as a quality upgrading mechanism in smallholder-based agricultural value chains. This study underscores that governance—not technology—is the primary lever for achieving quality upgrading in smallholder-based value chains.

ACKNOWLEDGMENT

The authors would like to thank the cooperative members and key informants for their valuable insights and cooperation during the research process. The authors also acknowledge the institutional support of BINUS Business School Master Program that facilitated the completion of this study.

REFERENCES

Aung, M. M., & Chang, Y. S. (2014). Traceability in a food supply chain: Safety and quality perspectives. Food Control, 39, 172–184. https://doi.org/10.1016/j.foodcont.2013.11.007

Bernard, T., & Spielman, D. J. (2009). Reaching the rural poor through rural producer organizations? A study of agricultural marketing cooperatives in Ethiopia. Food Policy, 34(1), 60–69. https://doi.org/10.1016/j.foodpol.2008.08.001

Bijman, J., Muradian, R., & Schuurman, J. (Eds.). (2016). Cooperatives, economic democratization and rural development. Edward Elgar Publishing.

Bosona, T., & Gebresenbet, G. (2013). Food traceability as an integral part of logistics management in food and agricultural supply chains. Food Control, 33(1), 32–48. https://doi.org/10.1016/j.foodcont.2013.02.004

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative Research in Psychology, 3(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Vol.6 No.1, 2026
ISSN 2477-1368 (P)
ISSN: 2829-8039 (E)
pp. 94-107

https://journal.adpebi.com/index.php/hbr

DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. American Sociological Review, 48(2), 147–160.

Food and Agriculture Organization. (2021). World essential oil market trends and the role of smallholder producers. FAO.

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

Humphrey, J., & Schmitz, H. (2002). How does insertion in global value chains affect upgrading in industrial clusters? Regional Studies, 36(9), 1017–1027. https://doi.org/10.1080/0034340022000022198

Iliopoulos, C., & Cook, M. L. (2020). The evolution of agricultural cooperatives: A theoretical framework. Journal of Cooperative Studies, 53(1), 5–19.

Patton, M. Q. (2015). Qualitative research & evaluation methods: Integrating theory and practice (4th ed.). SAGE Publications.

Ponte, S., & Sturgeon, T. (2014). Explaining governance in global value chains: A modular theory-building effort. Review of International Political Economy, 21(1), 195–223.

Reardon, T., & Farina, E. (2002). The rise of private food quality and safety standards: Illustrations from Brazil. International Food and Agribusiness Management Review, 4(4), 413–421.

Trienekens, J. H. (2011). Agricultural value chains in developing countries: A framework for analysis. International Food and Agribusiness Management Review, 14(2), 51–82.

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

World Bank. (2023). The basics of food traceability. World Bank.

Yin, R. K. (2014). Case study research: Design and methods (5th ed.). SAGE Publications.