

Accounting Behind Tebasan: Cost, Risk, and Price Construction in Durian Trading

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ABSTRACT

Purpose – This study explains how pre-harvest estimates become management-accounting objects in durian tebasan transactions and how calculative information is shared, negotiated, and later separated across orchard-owner and trader boundaries.

Design/methodology/approach – An exploratory qualitative case study uses ten informant records from Serang, Banten, but does not treat their evidentiary depth as symmetric. Three verbatim transcripts (T4, T5, P5) provide deep/direct evidence; condensed notes (T1–T3, P1) provide supporting case evidence; and owner-side transaction accounts (P2–P4) provide illustrative transaction evidence. Cross-case thematic analysis and one matched P4–T5 dyad are used with an explicit source-to-theme evidence matrix.

Finding/Results – Experience-based estimation, selective relevant costs, payment safeguards, and residual-value recovery are supported at different evidentiary depths. In the matched P4–T5 case, orchard-stage estimates, actual harvest, contract value, and major costs agree, while downstream figures differ. T5's reported arithmetic reaches Rp85.55 million, but damaged-fruit classification is not physically reconciled. The dyad is therefore consistent with, but does not establish, a provisional accounting-boundary asymmetry mechanism.

Originality/Value – The study's bounded contribution is a staged calculative coupling proposition: uncertain biological signals are temporarily converted into shared-enough calculative objects without a common accounting infrastructure, after which ex post visibility may become actor-specific as control rights shift. A temporal quality–risk calculus is retained as a narrower proposition. An unvalidated one-page transaction-record prototype is provided as a future managerial intervention requiring co-design and field testing.

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1. Introduction

Agricultural commodities are often traded before their final quantity and quality can be observed. In the durian tebasan system, the output of an orchard is sold for a single agreed amount while the fruit is still on the tree. The decision therefore occurs before the number of marketable fruits, degree of ripeness, damage, quality composition, and final selling prices are known with certainty. Tebasan is consequently more than a marketing arrangement; it is an arena of economic calculation under biological and market uncertainty. Orchard owners and traders must translate incomplete physical signals into estimates of quantity, cost, risk, and monetary value. The choice of agricultural sales method is indeed shaped by price expectations, risk preferences, contract design, and liquidity needs (Ambler et al., 2024; Peng & Xu, 2022; Ruml et al., 2022).

Durian intensifies this problem because it is seasonal, perishable, heterogeneous, and vulnerable to weather, pests, theft, and quality deterioration. The value of an individual fruit may vary with variety, size, ripeness, skin and flesh condition, and intended market. Fresh-food supply chains simultaneously face short shelf lives, uncertain supply, logistics disruptions, and waste (Ariong et al., 2023; Duarte et al., 2025). Quality attributes are also not always fully rewarded when buyers cannot observe or credibly verify them (Do Nascimento Miguel, 2024). In Serang, actors must therefore estimate how many fruits will survive to harvest, the costs incurred after agreement, the likelihood of obtaining particular quality grades, and the gains or losses associated with waiting for natural fruit fall.

At the small-business level, economic decisions are often not supported by formal cost-accounting systems. Resource, skill, and time constraints, together with perceptions of usefulness, can inhibit formal adoption even when simple management accounting information supports decision-making and performance (Roffia et al., 2024; Ylä-Kujala et al., 2023). The absence of ledgers or written calculations, however, does not imply the absence of calculation. Actors may use memory, experience, physical observation, comparisons with previous seasons, and bargaining conversations as calculative devices. Jakobsen (2024) shows that management accounting practices can support locally meaningful epistemic methods. The relevant question is therefore not whether orchard owners and traders follow textbook procedures, but how they construct and use information that they consider decision-relevant. Prior research has extensively examined agricultural contracts, marketing channels, market access, producer organizations, and intermediary finance. These studies explain why actors select particular channels and how contracts reallocate production and market risk, but they say less about the management-accounting problem that precedes agreement: how uncertain biological output is rendered into calculable numbers that can cross an organizational boundary. Small-business management-accounting research, in turn, explains why informal and locally meaningful calculations arise when formal systems are limited, but it generally examines calculations within a single organization or user group. Tebasan creates a distinct interface problem because orchard owners and traders must temporarily coordinate around estimates, prices, costs, and risk before output is known, while ex post accounting information may remain separately held. This unresolved transition from shared pre-contract calculation to selectively visible post-contract outcomes defines the specific management-accounting gap addressed here.

The study addresses three questions. First, how do orchard owners and tebasan traders estimate orchard output and construct a lump-sum price? Second, how are cost, time, quality, liquidity needs, and risk incorporated into the transaction? Third, to what extent can estimates,

actual output, costs, quality classifications, and sales revenue be reconciled between farmer and trader in a matched transaction? These questions place calculative practice, rather than average industry profit, at the center of analysis and capture the relationship among physical signals, experience, bargaining, and economic consequences.

This study aims to explain estimation practices in durian tebasan transactions, identify the cost and risk elements considered by actors, reconstruct selected reported transactions, and formulate theoretical and practical implications in proportion to the evidence. Its management-accounting contribution is deliberately bounded. The study proposes staged calculative coupling as a mechanism in which physical estimates, expected grades, relevant costs, liquidity, and risk become sufficiently shared or negotiated to support a contract even though the parties do not operate one accounting infrastructure. The matched P4–T5 dyad then provides case-derived evidence consistent with a possible post-contract separation of accounting visibility. Because only one dyad is matched, this latter interpretation is treated as a provisional accounting-boundary asymmetry proposition rather than a demonstrated general pattern. A second and narrower proposition; the temporal quality–risk calculus; applies only where a perishable standing crop allows discretionary harvest timing and waiting simultaneously changes quality assurance, control costs, loss exposure, and cash conversion. The study includes ten informants: five tebasan traders and five orchard owners, but the numerical balance does not imply equal evidentiary depth. T4, T5, and P5 are preserved as verbatim transcripts; T1–T3 and P1 are condensed interview notes; and P2–P4 are owner-side transaction accounts. T5, a trader with approximately 12 years of experience in Sayar, provides the most detailed trader-side transaction account. His account matches P4 on location, an estimate of 1,500 fruits, an actual harvest of 1,680 fruits, a Rp50 million contract, Rp4.5 million in guarding, Rp3.5 million in harvesting and transport, and residual recovery from 10 fruits at Rp5,000 each. The two sources report different downstream figures, and the T5 quality/damage classification is internally unresolved. These differences are used as case-specific analytical material, not as proof of intentional information asymmetry or of a general tebasan accounting mechanism.

2. Literature Review & Hypothesis Development

This section develops the analytical framework through four streams of literature: standing-crop transactions and marketing-channel choice; vernacular accounting and small-business management accounting; time, quality, loss, and liquidity; and bargaining position and collective action. These streams are required because a tebasan price cannot be explained by a single variable. Price emerges from the interaction of physical estimation, expected quality, relevant costs, liquidity needs, transferred work, risk exposure, market access, and bargaining power. The framework is used as a set of sensitizing concepts for qualitative coding and interpretation rather than for statistical hypothesis testing.

2.1. Standing-Crop Transactions and Marketing-Channel Choice

Selling a standing crop converts an uncertain future harvest into a lump-sum payment in the present. The agreement determines who obtains rights to the fruit, when payment occurs, and who bears guarding, harvesting, transportation, and market risk. Contract design can reallocate production, price, and marketing risks, but its welfare effects depend on contract terms and local conditions (Ruml et al., 2022; Van der Borght & Milian Gómez, 2024). Sales-method choice is also shaped by risk aversion and price expectations (Peng & Xu, 2022).

Tebasan should therefore be understood as an allocation of rights, tasks, time, and uncertainty rather than simply an early payment.

Marketing channels determine producers' access to buyers, information, logistics services, and opportunities to capture value. Evidence from high-value commodities shows that channel choice, transaction costs, and proximity to markets affect farm-gate prices (Ma et al., 2024; Villacis et al., 2024). A systematic review of market-access interventions finds generally small-to-moderate effects that depend heavily on design and context (Marion et al., 2024). Removing intermediaries does not therefore automatically improve welfare. Intermediaries may provide financing, aggregation, sorting, transport, storage, and buyer search, all of which would generate costs if performed by farmers themselves.

Price information can alter bargaining outcomes and generate spillovers across village networks (Courtois & Subervie, 2023). Yet final-price information alone is insufficient in tebasan because actual quantity and quality composition remain unknown at the time of agreement. Farmers may know retail prices but not the trader's full costs, shrinkage, unsold fruit, sales timing, or credit risk. Traders, conversely, interact with markets more frequently but may know less than orchard owners about the productivity history of particular trees. The agreed price therefore emerges from information that is partly shared and partly asymmetric. Agricultural intermediaries also face working-capital constraints and operational risk (Ambler et al., 2024). They pay for orchards before all sales revenue is realized and then spend on guarding, harvesting, transport, sorting, and marketing. Relational contracting may improve coordination and quality, but outcomes depend on governance and competition (Bulte et al., 2024; Navarrete-Cruz & Birkenberg, 2024). Concentrated power in food systems can weaken producer agency (Clapp et al., 2025). Trader margins should therefore be interpreted alongside the functions performed, capital tied up, losses borne, and bargaining positions that may be unequal.

2.2. Vernacular Accounting and Management Accounting in Small Businesses

Vernacular accounting refers to calculative practices developed by users for work they consider actionable (Kilfoyle et al., 2013). Such practices need not take the form of formal reports. They may appear as physical units, quality categories, oral conventions, estimated numbers, remembered costs, or rules of thumb. Their value lies in linking observation to action. In a durian orchard, fruit counts per tree, canopy density, visible size, memories of previous seasons, and remembered market prices may be combined into an offer. This method has an internal logic even when it is neither documented nor standardized.

The vernacular perspective prevents researchers from labeling actors irrational merely because they do not use formal cost sheets. Practical knowledge can be rooted in repeated exposure to objects and markets. Jakobsen (2024) emphasizes that management accounting can understand, support, and advance local epistemic methods. In tebasan, the common action is estimating: forming a judgment from visible signs and experience. The word *cakan* is used only by T4 to describe an activity resembling an informed guess. Because other informants use expressions equivalent to estimating or approximating, *cakan* is not treated as a collective indigenous concept. It is retained only as T4's individual expression.

Management accounting in small businesses is selective. Adoption is influenced by firm size, age, owner capability, environmental pressure, and perceived usefulness (Roffia et al., 2025; Ylä-Kujala et al., 2023). Actors may record purchase and sales values without separating own labor, waiting time, shrinkage, or working capital. As a result, what is labeled profit may have different boundaries across actors. Some calculate the difference between revenue and orchard

price, whereas others also deduct guarding and transport. Any reconstruction of margin must therefore define the cost boundary explicitly so that a partial contribution margin is not misrepresented as net profit.

Simple formalization may be useful when it helps actors compare estimates with realized outcomes. It may also fail if it increases recording burdens, uses unfamiliar terminology, or conflicts with work routines. The transaction sheet proposed in this study is therefore not a proven solution. It is a prototype that should be co-designed with users, tested across several seasons, and evaluated in terms of completeness, accuracy, completion time, and decision usefulness. The principle is to strengthen local knowledge through feedback rather than replace it with unused administration.

2.3. Time, Quality, Loss, and Liquidity

Time has two faces in fresh-food supply chains. Waiting may increase confidence in ripeness, but it also lengthens guarding, exposure to rain and wind, theft, animal damage, deterioration, and the period during which cash is tied up. Postharvest evidence shows that inadequate handling and storage create real losses and foregone premiums (Ariong et al., 2023). Fresh-food supply chains require rapid coordination because products are perishable (Duarte et al., 2025). For weather-dependent output, contracts also need to account explicitly for yield risk (Li et al., 2024). Durian trading adds a choice between harvesting physiologically mature fruit and waiting for natural fruit fall.

Quality and time cannot be separated from cash flow. Traders pay for the contract and operations before all output is sold. The longer sales take, the longer capital cannot be recycled. Farmers, by contrast, can receive cash earlier and avoid gradual selling. This liquidity value helps explain why a seemingly lower tebasan price is not necessarily perceived as disadvantageous by orchard owners. Yet earlier cash does not prove a fair distribution of value. Evaluation requires comparison with realistic alternatives, including family labor, losses, buyer-search costs, and the timing of receipts if farmers sell independently.

Low-quality fruit does not always lose all economic value. T4 and several orchard owners report that some damaged fruits can still be sold to processors producing dodol or frozen durian. This recovery constitutes residual value: revenue that reduces loss without eliminating it. Some fruit is still discarded, and sorting and delivery to processors may themselves generate costs. Residual revenue should therefore be recorded separately from primary-market sales so that the apparent value of damaged fruit is not overstated.

2.4. Bargaining Position, Collective Action, and the Research Gap

Producer organizations can improve commercialization, information access, and bargaining capacity, although benefits vary across members and contexts (Dureti et al., 2023; Grashuis & Skevas, 2023; Haldar & Damodaran, 2022; Tsai & Luh, 2023). Participation in value chains is also associated with efficiency and welfare outcomes (Abdul-Rahaman et al., 2023; Ma et al., 2023; Zhang et al., 2023). Producer organizations may act as transition intermediaries and reduce search or bargaining costs (Geffersa et al., 2022; Geffersa & Tabe-Ojong, 2024; Groot-Kormelinck et al., 2022). This literature provides a basis for discussing cooperatives or auctions, but does not establish that either would necessarily be superior in Serang.

Existing research explains individual components of contracts, markets, liquidity, quality, risk, and collective action. Less attention has been paid to the management-accounting interface through which these elements are compressed into negotiable quantities and prices before harvest, and then separated again as actors control different post-contract information. This study addresses that gap by treating estimation as a calculative device, the negotiated price as

a boundary object, and ex ante/ex post discrepancies as evidence about the reach and limits of inter-organizational calculation. Two ideas are used cautiously: cross-actor vernacular calculation and a temporal quality-risk calculus. The former proposes a mechanism of calculative coupling followed by selective decoupling; the latter proposes a time-based trade-off under specific perishability and harvest-discretion conditions. Both are analytically bounded propositions rather than established causal mechanisms.

The qualitative research model can be summarized as a staged process. Physical observation and experience generate estimates of quantity and quality. These estimates are combined with expected prices, relevant costs, liquidity needs, and risk exposure to create calculative objects that can be exchanged and negotiated. Agreement temporarily couples the parties around a contract value and allocation of tasks. After agreement, harvesting and marketing generate actual quantity, quality, costs, receipts, and cash timing, but these ex post measures may be observed, defined, and recorded differently by each actor. Comparing the ex ante and ex post stages can create feedback information; where records are absent or accounting boundaries differ, that feedback remains incomplete. This staged calculative coupling proposition is the specific extension to management-accounting scholarship proposed by the study.

2.5. Positioning the Proposed Mechanism in Management-Accounting Theory

Inter-organizational management-accounting research explains how accounting and control mechanisms coordinate tasks, manage appropriation concerns, and make inter-firm processes visible (Dekker, 2004; Caglio & Ditillo, 2008). Open-book accounting and target-costing arrangements, for example, rely on accounting information that is intentionally mobilized across organizational boundaries (Mouritsen et al., 2001). Tebasan differs in an important respect: coordination occurs without a formal shared accounting infrastructure. Orchard owners and traders temporarily align around estimates, negotiated quantities, contract values, payment timing, and selected costs that may be oral, remembered, or experience-based rather than standardized.

Boundary-object theory helps explain how representations can coordinate heterogeneous actors while retaining locally specific meanings (Star & Griesemer, 1989; Carlile, 2002). Related accounting research shows that inscriptions and mediating instruments can translate heterogeneous concerns into portable representations that organize action across sites and actors (Miller & O'Leary, 2007; Qu & Cooper, 2011; Miller & Power, 2013). In tebasan, estimated fruit quantity, expected quality, contract value, and payment timing can be interpreted through this lens. The present study does not assume, however, that these objects are stable or equally understood. Their calculative usefulness may be temporary and stage-specific.

The proposed extension is therefore narrow. First, the relevant calculative objects are created from uncertain biological signals rather than from pre-existing standardized records. Second, coordination can occur without a common ledger, open-book arrangement, or shared information system. Third, the integration may reverse after control rights shift: actors can align sufficiently to form and perform a contract while grade, damage, revenue, and margin information later become actor-specific. The matched P4–T5 dyad is consistent with this staged calculative coupling proposition, but one dyad cannot establish recurrence across tebasan transactions. The temporal quality–risk calculus is analytically separate and weaker: it remains a proposition about the joint salience of timing, quality, cost, risk, and liquidity rather than an empirically verified economic mechanism. Throughout the article, staged calculative coupling denotes the provisional process proposition. Accounting-boundary asymmetry denotes the

case-specific interpretation of divergent ex post measures within that proposition; it does not establish deliberate information withholding.

Table 1. Theoretical positioning of the proposed staged calculative coupling mechanism

Perspective	Central idea	What it explains in tebasan	Remaining gap / proposed extension
Vernacular accounting (Kilfoyle et al., 2013; Jakobsen, 2024)	User-generated, locally meaningful calculations support action without requiring formal accounting.	Explains experience-based estimation, remembered prices/costs, and practical rules of thumb.	Primarily explains local calculative practice; the present study asks how such numbers become temporarily usable across two parties.
Inter-organizational accounting/control (Mouritsen et al., 2001; Dekker, 2004; Caglio & Ditillo, 2008)	Accounting and control coordinate tasks and address inter-firm control problems.	Explains why contract values, payment rules, costs, and responsibilities can coordinate exchange.	Tebasan lacks a formal shared accounting infrastructure; coordination occurs through minimal and partly oral calculative objects.
Boundary objects (Star & Griesemer, 1989; Carlile, 2002)	Objects can be sufficiently robust for coordination while allowing different local interpretations.	Helps interpret negotiated quantity and price as shared-enough objects between owner and trader.	Does not by itself explain why sharedness may weaken after control shifts or how accounting categories become actor-specific.
Inscriptions / mediating instruments / calculative practices (Miller & O'Leary, 2007; Qu & Cooper, 2011; Miller & Power, 2013)	Representations make heterogeneous concerns portable and actionable across actors and sites.	Explains translation of biological cues into numbers that can support bargaining and action.	The tebasan objects are provisional, emerge from uncertain biological signals, and may not persist as shared measures ex post.
Proposed staged calculative coupling (this study)	Uncertain cues become shared-enough calculative objects for contracting; post-contract visibility can subsequently diverge.	Integrates pre-contract estimation, negotiated price, payment, relevant cost, and the matched-dyad discrepancy.	Case-derived and provisional. Requires multiple prospectively matched dyads before it can be treated as a recurring mechanism.

Source: Authors' theoretical synthesis based on the cited management-accounting and organization literature.

3. Methodology

The study uses an exploratory qualitative case-study design with interpretive and abductive orientations. The design was chosen because the object of inquiry consists of practices, language, judgments, and bargaining processes that do not have standardized measures. An interpretive approach helps explain the meanings actors assign to estimates, costs, quality, time, and risk. Abductive logic allows movement between data and concepts: empirical patterns are compared with vernacular accounting and agricultural-market literature, and concepts are recalibrated when evidence is insufficient. The study is not intended to test causal effects or estimate average profitability.

3.1. Research Setting, Object, and Unit of Analysis

The research setting covers Serang City and Serang Regency, Banten, particularly Sayar, Bojong-Gunung Sari, Cilowong, and Gunungsari as identified in the data. The object is durian tebasan trading, defined as the sale of rights to fruit in an orchard or group of trees for a lump-sum amount before all fruit is harvested. The unit of analysis is not the individual alone, but the calculative practice encompassing inspection, estimation, translation of estimates into money, negotiation, allocation of tasks and risk, harvest timing, and evaluation of outcomes. This unit keeps informant statements anchored to the transaction process.

The case boundary begins when a prospective buyer and orchard owner inspect the fruit and discuss estimates, and ends when harvest outcomes and known economic consequences are discussed. The boundary includes payment, guarding, harvesting, transportation, selling, damaged fruit, and residual revenue to the extent reported. The study does not observe the entire downstream market, audit traders' accounts, or assess fruit quality through laboratory testing. These boundaries are stated explicitly to prevent conclusions from exceeding the evidence.

3.2. Informants and Sampling

Informants were selected purposively based on direct experience with durian tebasan. The final sample comprises five traders (T1-T5) and five orchard owners (P1-P5). T5 is a full-time tebasan trader with approximately 12 years of experience in Sayar and reports that about 90% of his purchases use the tebasan system. Adding T5 balances the actor composition and provides detailed evidence on estimation, payment, quality grading, costs, damage, revenue, and margin from the trader's side. The sample is not intended to statistically represent the population.

One matched transaction can be identified between P4 and T5 through an identical transaction fingerprint: Sayar location; an estimate of 1,500 fruits; an actual harvest of 1,680; a Rp50 million contract; Rp4.5 million in guarding; Rp3.5 million in harvesting and transport; and 10 residual fruits sold at Rp5,000 each. This match strengthens validation of operational elements. However, sales revenue does not match: P4 reports Rp72 million and T5 reports Rp85.55 million. Both figures are retained as source-specific accounts and are neither merged nor averaged. Profit claims are restricted to calculations that can be traced.

Table 2. Informant profiles and evidentiary contribution

Code	Role and Location	Evidence contribution	Status
T1	Trader/tebasan buyer; Sayar	Quantity estimates, tree price, picking strategy	Interview notes

Code	Role and Location	Evidence contribution	Status
T2	Trader/tebasan buyer; Bojong-Gunung Sari	Natural fruit fall, price range, slower cash realization	Interview notes
T3	Trader/tebasan buyer; Gunung Sari	Tree size/density, paid guarding	Interview notes
T4	Trader/tebasan buyer; location not stated	Expression cakan, lump-sum price, time, residual value	Verbatim transcript
T5	Trader/tebasan buyer; Sayar	12 years; 9,000 m ² orchard; estimation, grade, costs, revenue	Verbatim transcript
P1	Orchard owner; Bojong-Gunung Sari	Orchard profile, seasonal value, cash and risk	Interview notes
P2	Orchard owner; Cilowong	Estimate 1,200, actual 1,350, contract and costs	Owner account
P3	Orchard owner; Gunungsari	Estimate 1,600, actual 1,780, contract and costs	Owner account
P4	Orchard owner; Sayar	Estimate 1,500, actual 1,680, contract and costs	Owner account
P5	Orchard owner; Sayar	Visual estimation, bargaining, trust	Verbatim transcript

Source: Interview data processed by the authors (2026).

3.3. Data Collection and Instruments

Data were collected through semi-structured interviews, interview notes, and transaction-oriented follow-up accounts. The analytical archive contains one identifiable interview record for each of the ten informants, but the evidentiary form is heterogeneous: T4, T5, and P5 are preserved as verbatim transcripts, T1–T3 and P1 are available as condensed interview notes, and P2–P4 are owner-side transaction accounts. The T5 interview was conducted on September 7, 2026, in the Sayar durian-growing area and covered occupational experience, reasons for tebasan, estimation, bargaining, payment, conflict, actual quantity, grading, grade-specific selling prices, costs, damage, residual value, downstream receipts, and margins. Comparable interview durations were not systematically recorded for all ten records; the study therefore does not report a standardized duration statistic that the source archive cannot support.

The interview instrument was deliberately open-ended so that actors' terms were not forced into researcher-defined categories. When informants used expressions equivalent to estimating, approximating, guessing, or cakan, the researcher asked what activity the term referred to. The evidence shows a similar practice of visual estimation, but is insufficient to treat all expressions as one shared local term. Estimating is therefore used as the general analytical label, while cakan is retained only when quoting or explaining T4's individual expression.

Quantitative information embedded in interviews is treated as part of the qualitative narrative. Numbers clarify scale, calculative sequence, and discrepancies; they are not used for statistical

inference. Informants are anonymized using T codes for traders and P codes for orchard owners. Locations are reported only at the level provided by the data. The coding convention also helps readers identify whether a statement originates from the trader or orchard-owner side.

The study does not claim formal theoretical saturation. Sampling adequacy is instead treated as analytical coverage: the final archive balances trader and orchard-owner roles, contains multiple cases for estimation and transaction outcomes, and includes one matched dyad. The absence of additional matched dyads is retained as a limitation rather than converted into a saturation claim. This distinction is important because the purpose is process explanation, not statistical or theoretical exhaustiveness.

Evidentiary depth is explicitly weighted rather than inferred from the numerical balance of five traders and five orchard owners. T4, T5, and P5 constitute deep/direct evidence because the analytical archive preserves verbatim transcripts. T1–T3 and P1 constitute supporting case evidence because they are preserved as condensed interview notes. P2–P4 constitute illustrative transaction evidence because the available records emphasize quantities, contract values, costs, and outcomes from the owner's side. A theme is described as cross-case only when it is supported by more than one source or evidence type. Mechanisms that depend primarily on the P4–T5 dyad are labeled case-derived and provisional. Direct quotations are used only where exact wording is preserved; condensed notes are never reconstructed as quotations.

3.4. Data Analysis and Trustworthiness

Analysis proceeded in four stages. First, near-data coding retained expressions and observations concerning estimating, fruit density, market grades, guarding, down payments, damage, risk, liquidity, and residual value. Second, these codes were grouped into second-order categories: orchard valuation, price construction, relevant costs, liquidity and payment control, risk transfer, estimation error, time-quality trade-offs, residual value, and accounting-boundary asymmetry. Third, cross-case comparison examined convergence and divergence across T1–T5 and P1–P5, rather than treating the matched P4–T5 transaction as the sole empirical base. Fourth, the categories were interpreted through vernacular accounting and agricultural-market literature. The process followed principles of traceability and reflexivity in thematic analysis (Braun & Clarke, 2021). Table 3 makes the evidence-to-theme chain explicit, while Table 4 maps evidentiary depth source-by-source for each major analytical claim.

Trustworthiness was strengthened through perspective triangulation, transaction-fingerprint matching, negative-case attention, internal-consistency checks, and an explicit evidence trail. Negative and divergent evidence changed the interpretation rather than being treated as noise. Only T4 used the term *cakan*, so the shared concept was narrowed to experience-based estimating. T1 used faster picking while T2–T4 preferred natural fruit fall, so harvest timing was retained as a trade-off rather than a superior strategy. The P4–T5 match confirms seven orchard-stage and cost elements but reveals a Rp13.55 million difference in reported downstream receipts/revenue, while grade counts and damaged-fruit counts are not fully reconcilable. These divergences are used to define the limits of shared calculation.

Each quantitative statement was classified into three types. The first is a fact directly reported by an informant about his or her own experience, such as estimated quantity, contract value, or actual harvest. The second is an orchard owner's account of the trader's side, such as guarding costs or sales revenue as known or remembered by the owner. The third is a

researcher calculation, such as absolute differences, percentage estimation errors, and partial margins. Theoretical interpretations are presented only after the underlying evidence. This classification reduces the risk of converting indirect reports into verified facts.

Reflexivity was exercised by revisiting initial claims as the composition and internal consistency of the evidence became clearer. The term *cakan* was narrowed from a possible shared local construct to T4's case-specific expression; the idea of a fully distributed accounting system was recalibrated to partially connected cross-actor calculation; and the temporal quality-risk calculus was retained only as a proposition. Coding was interpretive rather than reliability-coefficient driven. To reduce researcher expectancy effects, interpretations were accepted only after the underlying source type was identified and disconfirming evidence was considered. Where the evidence could support more than one explanation; most notably the P4–T5 revenue discrepancy; the manuscript preserves the ambiguity rather than selecting the explanation most favorable to the theory.

Table 3. Evidence-to-theme audit trail for the qualitative analysis

Near-data evidence	First-order code	Second-order category	Final theme / theoretical use
T4: “tebak aja, Pak” and “setiap tahun seringnya kayak gitu”; T1 estimates 50–100 fruits/tree; T3 selects large, densely fruited trees; T5 visually estimates clusters	Visual/experience-based estimating	Orchard valuation	Vernacular estimation as a calculative device
T5 translates 1,500 expected fruits, grade prices and operating costs into a Rp50m offer; P2–P4 report contract values and post-contract costs	Converting uncertain output into money	Price construction / relevant cost	Calculative coupling at contracting
P1 values faster cash and lower risk; T5 uses 50% down payment and final settlement before first truck; P2–P4 report payment safeguards	Liquidity and payment control	Liquidity / risk transfer	Contract as exchange of cash timing, tasks and risk
T1 picks physiologically mature fruit; T2–T4 wait for natural fall; T4 reports up to ~40 days and daily guarding cost	Timing alters maturity assurance, cost and exposure	Time–quality trade-off	Temporal quality-risk calculus (provisional)
T4: low-quality fruit “tetep ada harganya”; P2–P4 and T5 report some damaged fruit sold to processors	Recovering value from downgraded output	Residual value	Loss recovery within informal calculation
P4 and T5 match on estimate, harvest, contract and major costs but differ on Rp72m vs Rp85.55m downstream figure; damaged-fruit classification also differs	Shared ex ante numbers, divergent ex post boundaries	Accounting-boundary asymmetry	Partially coupled cross-actor calculation
Only T4 uses <i>cakan</i> ; timing strategies differ; revenue and grade data remain unresolved	Negative/divergent evidence	Claim recalibration	Limits of generalization and mechanism boundary conditions

Source: Interview records and transaction evidence processed by the authors (2026).

Table 4. Source-by-theme matrix and evidentiary depth of major claims

Major theme / claim	Deep/direct evidence	Supporting case evidence	Illustrative transaction evidence	Claim status / limit
Experience-based estimation	T4, T5; P5 (verbatim)	T1, T3 notes	P2–P4 estimates vs actuals	Strong for existence of experience-based estimation; not evidence of one shared term or formula.
Price construction / bargaining	T4, T5; P5 (verbatim)	T1 note	P2–P4 contract values and owner-side bargaining accounts	Moderate-to-strong for lump-sum construction; no causal estimate of bargaining power.
Liquidity / payment control	T5 (verbatim)	P1 note	P2–P4 payment safeguards	Moderate and role-asymmetric; numerical 5/5 balance does not imply symmetric depth.
Risk transfer / risk perception	T4, T5 (verbatim)	T1, T3, P1 notes	P2–P4 owner-side cost/payment accounts	Moderate; supports risk salience, not a quantified risk premium.
Harvest timing trade-off	T4 (verbatim)	T1–T3 notes	No equivalent owner-side timing record	Provisional. Supports existence of different timing strategies, not their financial effect.
Residual-value recovery	T4, T5 (verbatim)	;	P2–P4 damaged-fruit accounts	Moderate cross-role support for partial recovery; full handling costs are unobserved.
Accounting-boundary asymmetry	T5 (verbatim downstream account)	;	Matched P4–T5 dyad	Case-derived only. Consistent with a provisional mechanism; one dyad cannot establish a general pattern.

Source: Authors' classification of the analytical archive. "Deep/direct" indicates preserved verbatim material; "supporting" indicates condensed interview notes; "illustrative transaction" indicates transaction-focused owner accounts.

4. Results and Discussion

The findings are organized along the transaction flow: estimating the orchard, translating estimates into price, comparing estimates with realized output, reallocating risk and liquidity, choosing harvest timing, recovering value from damaged fruit, and interpreting inter-actor relationships. This processual organization distinguishes information available before agreement from information that becomes known only after harvest. The timing of information availability is central to the accounting problem in tebasan.

4.1. Estimating as Experience-Based Orchard Valuation

Experience-based estimation is supported at different evidentiary depths. The most direct evidence comes from the verbatim T4 and T5 records and is corroborated by T1 and T3 notes and by owner-side estimate/outcome records. T5 calls the activity "estimating the orchard" and visits approximately two months before harvest, when the fruit is about the size of a tennis ball. In an example involving a 9,000 m² orchard with 70 trees, about 50 trees were judged to

be actively and heavily fruiting. T5 visually counted fruit clusters, agreed on 1,500 fruits expected to survive, applied reference prices by grade, and deducted guarding and harvesting costs before offering Rp50 million. This account provides deep evidence of one trader's calculative sequence; it should not be read as evidence that every informant performs the sequence with the same detail or formula.

Estimating compresses multiple indicators into a number that can be discussed. Actors consider visible fruit counts, density on branches, size, variety, tree condition, the possibility of fruit drop or damage, and experience from prior harvests. Not all indicators receive explicit weights. Expertise appears as the ability to recognize patterns and make rapid adjustments. Because much of the reasoning is stored in experience, two observers may inspect the same orchard yet generate different estimates. Bargaining then becomes a space in which these numbers are tested, defended, or revised.

T4 uses the word *cakan* and explains it as “tebak aja, Pak” [we just estimate it, Sir], learned because “setiap tahun seringnya kayak gitu” [it is usually like that every year]. The quotation shows repeated experiential knowledge but does not establish *cakan* as a communal term. Other informants do not use it. The study therefore treats *cakan* as T4's individual expression for estimating, while the broader analytical category is experience-based estimation. This distinction matters because a scientific concept should not be built from one term that has not been validated across informants.

From a vernacular-accounting perspective, estimating is a calculative device that makes an uncertain biological asset tradable. Its output is not a final measure but an action number: concrete enough to support an offer and flexible enough to negotiate. This finding is consistent with the idea that user-generated calculative systems connect cognitive and social dimensions (Kilfoyle et al., 2013). It is cognitive because actors process signs and experience; it is social because a number acquires consequences once communicated, compared, and agreed.

The main weakness of estimating is the limited systematic feedback. If initial estimates are not recorded and actual results are not counted consistently, experience is difficult to update quantitatively. Actors may remember unusually profitable or loss-making transactions while forgetting routine cases. Simple records could transform experience into a learning base by comparing each tree or lot across variety, fruit age, weather conditions, estimates, and realizations. This potential, however, still needs to be tested with users so that recording does not disrupt transaction speed.

4.2. From Physical Estimates to Tebasan Prices

Once a physical estimate is formed, actors translate it into monetary value, but the evidence is deepest for T4 and T5 and more limited for the remaining cases. T5 states that the estimate of 1,500 fruits is multiplied by reference prices by grade and then reduced by the team's operating costs. T4's verbatim account gives a complementary lump-sum expression: “Kita globalin. Jadi kita beraninya ... berani 5 juta” [we make it a lump sum; we are willing to pay around Rp5 million]. The quotation supports the existence of lump-sum translation from expected fruit to an offer, but it does not establish a common pricing formula across traders. T5 also reports that traders can possess bargaining advantages because they mobilize cash and know wholesale-market prices; orchard owners with high-quality fruit and alternative buyers may negotiate more forcefully.

The *tebasan* price is a threshold that must be acceptable to both sides. For orchard owners, the threshold reflects liquidity needs, maintenance costs already incurred, expected output, and alternatives to self-marketing. For traders, it reflects expected revenue, post-contract costs, the

possibility of damage or unsold fruit, working-capital turnover, and the required margin. Agreement does not mean that both sides value each component identically. It indicates only that, at that moment, both prefer the contract to the alternatives they envisage.

P2-P4 report that traders emphasize possible poor outcomes in their initial offers, while orchard owners sometimes accept because they need household funds or capital for the next season. Owners with price information and alternative buyers feel stronger in negotiation. This pattern is consistent with evidence that information access and marketing channels influence bargaining outcomes (Courtois & Subervie, 2023; Villacis et al., 2024). The interviews, however, do not measure buyer concentration or quantify a discount attributable to market power. Unequal bargaining is therefore discussed as reported experience, not as a causal estimate.

The agreed price also transfers work. After agreement, traders generally take over guarding, harvesting, transport, sorting, and marketing. The value of these services is hidden if analysis compares only farm-gate and final selling prices. Orchard owners who sell independently may obtain higher gross revenue but bear different activities and risks. Fairness therefore requires comparison with equivalent alternatives rather than two nominal prices alone. This is consistent with the view that intermediaries perform real functions even while they may possess greater bargaining power.

4.3. Cross-Case Convergence and Divergence

Cross-case comparison uses the ten records with unequal evidentiary weights rather than treating numerical balance as equivalent depth. Table 4 shows which themes rest on verbatim evidence, condensed notes, or illustrative transaction accounts. Estimation has the broadest convergence: T1 uses an approximate fruit count, T3 emphasizes tree size and fruit density, T4 describes estimating as *cakan*, T5 reports visually counting clusters and applying grade references, and P2–P5 provide owner-side evidence of estimates, realized quantities, or visual assessment. The common pattern is therefore the conversion of incomplete physical signals into actionable numbers, not a shared vocabulary or standardized formula.

Bargaining, liquidity, and risk also show convergence with important role differences. T5 reports stronger trader knowledge of wholesale prices and the ability to mobilize cash, whereas P2–P4 describe traders emphasizing downside scenarios during initial offers. P1 values *tebasan* because cash is received sooner and perceived harvesting/marketing risk is lower. P2–P4 report safeguards such as down payments, written agreements, or settlement before fruit leaves the orchard. These cases support risk and liquidity as shared transaction concerns, but not identical valuations of them.

Harvest timing is the clearest cross-case divergence. T1 accelerates marketing by picking fruit judged mature, whereas T2–T4 prefer natural fruit fall; T3 and T4 incur guarding costs while waiting. This divergence is analytically useful because it prevents the study from treating one timing strategy as universally optimal. Residual-value recovery, by contrast, appears across both sides: T4 reports that low-quality fruit “*tetep ada harganya*” [still has a price], and P2–P4 and T5 report small quantities of damaged fruit entering secondary processing markets.

The cross-case evidence also contains negative cases that narrow the theory. *Cakan* is not shared terminology, downstream accounting information is not symmetrically visible, and different harvest strategies coexist. Accordingly, the P4–T5 transaction is treated as a particularly informative matched case within a broader pattern matrix, not as the sole foundation for the theoretical contribution.

Table 5. Cross-case pattern matrix across traders and orchard owners

Theme	Trader evidence	Orchard-owner evidence	Cross-case interpretation
Estimation	T1: 50–100 fruits/tree; T3: large/dense trees; T4: cakan; T5: visual cluster count and grade references	P2–P4: initial estimates and realized output; P5: visual estimation/bargaining	Converges on experience-based estimation, not a single shared term or formula
Bargaining / information	T5: cash availability and wholesale-price knowledge; traders bear post-contract marketing	P2–P4: downside scenarios in offers; P5: bargaining and trust	Both sides use market information, but access and bargaining positions differ
Liquidity / payment control	T5: 50% down payment, final settlement before first truck, reputation linked to future supply	P1: faster cash and lower perceived risk; P2–P4: safeguards against delayed payment	Liquidity is mutually relevant but valued from different role positions
Harvest timing	T1: picks mature fruit; T2–T4: natural fall; T3/T4: guarding while waiting	No equivalent owner-side timing comparison in available evidence	Divergence supports a provisional time–quality–risk trade-off, not superiority
Residual value	T4: Rp3,000–Rp5,000 for low-quality fruit; T5: residual recovery reported	P2–P4: small damaged-fruit quantities sold to processors	Converges on partial value recovery from downgraded output
Accounting boundary	T5 has detailed grading and downstream figure	P4 shares orchard-stage figures but reports a different downstream figure	Coordination is stronger ex ante; ex post accounting boundaries remain asymmetric

Source: Cross-case synthesis of T1–T5 and P1–P5 interview evidence (2026).

4.4. Transaction Reconstruction, Scenario Reconciliation, and a Case-Derived Accounting-Boundary Proposition

Additional interviews allow the reconstruction of three farmer-reported transactions and one matched P4–T5 verification. The pair agrees on an estimate of 1,500 fruits and an actual harvest of 1,680, yielding a difference of 180 fruits, or 12.00% of the estimate. T5 interprets this surplus as an offset against losses on other orchards and emphasizes that he cannot claim compensation from an owner when realized output is lower. This statement directly shows how a tebasan trader interprets estimation differences as part of portfolio risk.

The fact that all reported differences are positive may suggest deliberately conservative estimation or asymmetric information. Three cases, however, are insufficient to establish systematic bias. Fruit may continue developing after agreement, some may be obscured by foliage, actual counting methods may differ, and informant recall may be imperfect. The study also lacks independent initial counts from each party. The defensible conclusion is only that material differences occur in the reported cases and may affect the distribution of value.

The initial reconstruction based on P4 uses an orchard-owner-reported figure of Rp72 million for the trader's downstream receipts/sales and yields a researcher-derived partial margin of Rp14 million after deducting the contract, guarding, harvesting, and transport items reported in that account. T5, by contrast, reports 700 grade-A fruits at Rp70,000, 600 grade-B at

Rp45,000, and 380 grade-C at Rp25,000, which arithmetically produces Rp85.50 million. Adding 10 residual fruits at Rp5,000 gives Rp85.55 million, and deducting the Rp50 million contract plus Rp8 million in listed major operating costs gives Rp27.55 million. These two T5 figures are reported arithmetic, not a physically reconciled transaction total, because the A/B/C counts already equal 1,680 while 35 damaged fruits are also described as belonging to the same harvest.

To make the accounting consequence of this ambiguity explicit, Table 8 presents alternative reconciliation scenarios. If the 35 damaged fruits are included within the 1,680 and replace 35 units otherwise treated as grade C, saleable grade C would fall to 345 fruits, 10 residual fruits would generate Rp50,000, and 25 fruits would be discarded. Under that conditional assumption, downstream revenue would be Rp84.675 million and the partial margin under the same listed cost boundary would be Rp26.675 million. These are illustrative arithmetic results, not claims about the actual transaction. If the 35 damaged fruits are outside the 1,680, the physical count becomes 1,715 and is inconsistent with the reported actual harvest. The unresolved classification is therefore an accounting-category problem, not merely a missing-number problem.

Owner-calculated income figures of Rp35 million, Rp43 million, and Rp39 million are based on the contract value less annual maintenance costs as understood by the orchard owners. They are not standardized accounting profit measures because family labor, depreciation, implicit land rent, opportunity costs, or other items may be excluded. The trader-side and owner-side figures therefore use different practical accounting boundaries. The revised analysis uses the labels owner-calculated income, owner-reported trader downstream figure, trader-reported downstream figure, researcher-derived partial margin, and trader-reported partial margin to prevent unlike quantities from being treated as equivalent profit measures. The analytical value of transaction tables lies not in claiming absolute accuracy but in connecting numbers within a traceable narrative. The tables show when quantity was estimated, what the actual outcome was, who reported each cost, and which calculations were performed by the researchers. This transparency is particularly important in qualitative research containing numerical evidence because it allows readers to assess evidentiary strength, identify missing components, and distinguish description from interpretation.

Table 6. Orchard-owner-reported transactions and researcher reconstruction

Component	P2	P3	P4	Evidence status
Estimated fruit (units)	1,200	1,600	1,500	Directly reported
Actual output (units)	1,350	1,780	1,680	Directly reported
Difference (units)	150	180	180	Researcher arithmetic
Difference / estimate	12.50%	11.25%	12.00%	Researcher arithmetic
Tebasan contract value	Rp45.0m	Rp55.0m	Rp50.0m	Directly reported
Guarding cost	Rp4.5m	Rp5.0m	Rp4.5m	Owner account of trader cost
Harvesting and transport	Rp3.5m	Rp4.5m	Rp3.5m	Owner account of trader cost

Component	P2	P3	P4	Evidence status
Trader downstream sales figure as reported by owner	Rp65.0m	Rp80.0m	Rp72.0m	Owner account of trader revenue
Researcher-derived partial margin*	Rp12.0m	Rp15.5m	Rp14.0m	Researcher arithmetic
Damaged fruit sold	10 × Rp5,000	15 × Rp6,000	10 × Rp5,000	Directly reported
Owner-calculated income**	Rp35.0m	Rp43.0m	Rp39.0m	Farmer calculation

Notes: *Sales revenue minus contract value, guarding, harvesting, and transport; not verified net profit.

**Contract value minus annual maintenance costs as calculated by orchard owners. Source: Interviews with P2-P4 and researcher calculations (2026).

Table 7 reconciles the P4–T5 transaction. “Matched” means both sources report the same figure. “Different” retains the version provided by each source. “Unclear” indicates that the transcript does not provide enough information to determine whether categories overlap. The table intentionally separates owner-reported downstream figures, trader-reported downstream figures, and researcher calculations rather than treating any of them as audited revenue or profit.

Table 7. Reconciliation of P4 and T5 transaction evidence

Component	P4: orchard owner	T5: trader	Reconciliation
Location	Sayar	Sayar	Matched
Area and trees	Not detailed	9,000 m ² ; 70 trees	Additional T5 detail
Initial estimate	1,500 fruits	1,500 fruits	Matched
Actual harvest	1,680 fruits	1,680 fruits	Matched
Contract value	Rp50 million	Rp50 million	Matched
Guarding	Rp4.5 million	Rp4.5 million	Matched
Harvesting and transport	Rp3.5 million	Rp3.5 million	Matched
Residual value	10 × Rp5,000	10 × Rp5,000	Matched
Quality classification	Not detailed	A 700; B 600; C 380	Additional T5 detail
Damaged fruit	10 sellable	35: 25 discarded; 10 sold	Different scope
Source-reported downstream receipts/revenue	Rp72 million	Rp85.55 million (reported arithmetic; damaged-fruit classification unresolved)	Different by Rp13.55 million; not fully reconciled
Partial margin / margin figure	Rp14 million; initial reconstruction	Rp27.55 million (reported arithmetic under listed cost boundary)	Conditional / not physically reconciled

Source: Interviews with P4 and T5 and researcher calculations (2026). Note: T5's grade counts already total 1,680 fruits. The reported Rp85.55 million downstream figure and Rp27.55 million partial margin are arithmetic based on T5's account, but they are not physically reconciled until the relationship between the 35 damaged fruits and the A/B/C counts is clarified.

Table 8. Conditional reconciliation scenarios for T5's damaged-fruit classification

Scenario	Physical interpretation	Downstream revenue	Partial margin*	Evidentiary status
A. T5-reported arithmetic	Grade A+B+C already total 1,680; 10 residual fruits are additionally valued at Rp5,000 each.	Rp85.55m	Rp27.55m	Reported arithmetic; not physically reconciled because overlap is unresolved.
B. 35 damaged fruits are part of the 1,680	Assume 35 fruits are within grade C: 345 saleable grade-C fruits, 10 residual fruits, 25 discarded.	Rp84.675m	Rp26.675m	Conditional researcher scenario only; illustrates the effect of classification boundaries.
C. 35 damaged fruits are outside the 1,680	Physical total becomes 1,715 fruits.	Not reconcilable	Not reconcilable	Inconsistent with the reported actual harvest; requires source clarification.

Note: *Partial margin = downstream revenue minus the Rp50 million contract and Rp8 million of listed major operating costs. No scenario is treated as verified net profit. Scenario B is an illustrative arithmetic consequence of one classification assumption, not a claim about the actual transaction.

The reconciliation yields a case-derived accounting lesson rather than proof of a general boundary mechanism. Agreement on the estimate, actual harvest, contract value, major operating costs, and residual-value item shows that P4 and T5 can coordinate this transaction through a shared set of orchard-stage calculative objects. The Rp13.55 million difference in source-reported downstream figures and the unresolved damaged-fruit classification show that, in this dyad, shared calculation does not extend cleanly to all ex post measures. The study uses the term provisional accounting-boundary asymmetry for this case-specific pattern: enough information is aligned to form and execute the contract, while downstream grade, revenue, loss, and margin information remains differently recorded or remembered. The data do not identify whether the discrepancy arises from recall, timing, coverage, definition, missing sales, or another source, and they do not demonstrate intentional withholding of information.

The theoretical value of the dyad lies in separating coordination from full information integration, not in generalizing from one case. Inter-organizational accounting research already shows that accounting can coordinate actors across boundaries; the present case suggests a more fragile configuration in which coordination is achieved through a small set of provisional calculative objects without a common accounting infrastructure. Whether this staged coupling and subsequent divergence recurs systematically remains an empirical question. Multiple prospectively matched owner-trader dyads are required before accounting-boundary asymmetry can be treated as a recurring mechanism of tebasan trading.

4.5. Liquidity, Risk Transfer, and Payment Safeguards

Orchard owners repeatedly describe payment speed and certainty as benefits of tebasan. P1's owner-side account emphasizes faster cash and lower perceived risk, while P2-P4 report safeguards adopted after experiences of delayed payment. T5 confirms the trader's side:

tebasan secures a large volume of supply and locks in a purchase price to meet market quotas; he reports a 50% down payment at agreement and final settlement no later than the first truck loading. The convergence is therefore not that both sides hold identical calculations, but that cash timing is an explicit transaction object viewed from opposite positions; liquidity and payment assurance for owners, and supply continuity and reputation for the trader.

By accepting a lump-sum value, orchard owners transfer part of the biological and market risk to traders. After agreement, traders bear guarding, fruit loss, damage, lower-than-expected output, logistics costs, price changes, and slow sales according to local arrangements. Risk, however, does not disappear; its form changes. Orchard owners may face delayed payment or buyer default. P2-P4 recall delays in earlier transactions and respond with 50% down payments, written agreements, or full settlement before fruit leaves the orchard.

Payment safeguards show a control structure developed from experience. A down payment creates commitment and early liquidity; a written agreement provides a reference; and settlement before removal of fruit preserves a control right. Repeated relationships and reputation may reduce uncertainty but do not replace verifiable mechanisms. Farmer-trader governance can enhance value-chain resilience (Navarrete-Cruz & Birkenberg, 2024). In practice, simple controls need to be proportionate to contract size and enforcement capacity.

Risk transfer cannot be evaluated solely by comparing which party receives a larger margin. A party bearing risk can reasonably demand compensation, but fair compensation depends on information and alternatives. If the probability of damage is exaggerated or output is consistently underestimated, a risk premium may become an information rent. Conversely, if trader costs and losses are ignored, margins appear excessive. Longitudinal matched data are needed to separate risk compensation, remuneration for functions performed, estimation error, and bargaining power.

T4's verbatim account reinforces this theme in more colloquial terms: "kita kadang untung, kadang rugi" [sometimes we profit, sometimes we lose]. This statement is consistent with T1's prediction-risk account and T5's portfolio interpretation of estimation surpluses and shortfalls. Across trader cases, risk is therefore not an abstract probability but an accepted possibility that shapes the price ceiling and the need for guarding, and the evaluation of one orchard against outcomes from other orchards.

4.6. Temporal Quality-Risk Calculus as a Provisional Theoretical Proposition

This subsection moves from observed timing differences to a provisional theoretical proposition; it does not report a verified financial mechanism. Traders report different harvest-timing strategies. T1 picks fruit judged physiologically mature to accelerate selling, whereas T2–T4 tend to wait for natural fruit fall to increase confidence in ripeness. T4 reports a waiting period of up to approximately 40 days and guarding costs during that period. These observations support the existence of a trade-off involving quality assurance, control costs, exposure to loss, and cash-turnover speed, but the available cases do not measure those consequences on comparable lots.

Waiting for natural fall may signal ripeness that certain buyers value. Additional time, however, also increases the risk of impact damage, theft, animal consumption, weather exposure, and late marketing. Guards must be paid and the contract capital remains tied up. Earlier picking accelerates cash turnover and reduces exposure time but may create uncertainty about flavor or market acceptance. Actors weigh these factors intuitively even when they do not convert each one into a written monetary amount.

The data do not isolate a price premium caused by waiting. Traders operate across different orchards, varieties, segments, and buyer networks. Higher prices may reflect fruit size, variety, market location, or clientele rather than natural ripening. The temporal quality-risk calculus is therefore positioned as an initial proposition: time appears to organize quality, cost, risk, and liquidity, but its net financial effect remains unverified. Testing requires tracking comparable lots from contract formation to final cash realization.

A future test should record contract date, harvest date for each lot, harvesting method, quality grade, lost or damaged fruit, daily guarding cost, transport cost, grade-specific prices, sales date, and cash-receipt date. Comparisons should be made within comparable varieties and markets. Such a design would allow researchers to assess whether additional waiting days actually generate a quality premium that exceeds the incremental costs and risks.

4.7. Damage and Residual-Value Recovery

T4 reports that some low-quality fruit can still be sold for processing at approximately Rp3,000–Rp5,000 per fruit and summarizes the logic as “tetep ada harganya” [it still has a price]. P2–P4 likewise report small quantities of damaged fruit accepted by processors, while the matched P4–T5 case agrees on recovery from 10 fruits at Rp5,000 each. Residual-value recovery is therefore supported across more than one case and across owner/trader evidence, although many damaged fruits are still discarded and the data do not capture all handling costs.

Managerially, damaged fruit should be separated into recoverable and non-recoverable categories. For recoverable fruit, records should include quantity, selling price, additional labor, packaging, and transport. For non-recoverable fruit, records should capture the cause and stage of damage. This distinction helps separate biological loss before harvest, damage arising from timing or handling, and market rejection. Without such classification, residual revenue can conceal the scale of losses or make waiting decisions appear more favorable than they actually are.

4.8. Empirical Findings, Provisional Theory, and the Hierarchy of Claims

To preserve the inferential hierarchy requested by the evidence, the study separates three layers. Layer 1 comprises empirical findings directly or supportively documented in the archive: actors estimate uncertain biological output, negotiate lump-sum values, consider selected post-contract costs, use payment safeguards, adopt different harvest-timing strategies, and sometimes recover residual value from downgraded fruit. The matched P4–T5 dyad additionally documents agreement on several orchard-stage and cost figures together with unresolved downstream discrepancies. These are findings about the observed records; they do not by themselves establish a general mechanism.

Layer 2 comprises provisional theoretical propositions. The distinctive claim is not that informal actors calculate; vernacular accounting already explains that; nor that organizations coordinate through accounting; inter-organizational accounting already explains that. The proposed extension is narrower: uncertain biological signals are temporarily converted into shared-enough calculative objects without a common ledger or open-book infrastructure, and that integration may weaken after control rights shift. The P4–T5 case provides case-derived evidence consistent with this staged calculative coupling / accounting-boundary asymmetry proposition, but does not establish its recurrence. The temporal quality-risk calculus is an even narrower proposition generated from divergent timing practices and remains untested at comparable lot level.

The boundary conditions are therefore explicit. Staged calculative coupling is most plausible when output is uncertain at contract formation, both parties participate in inspection or negotiation, measurement is costly, and post-contract tasks shift to one party. The provisional accounting-boundary asymmetry interpretation becomes relevant when downstream measurement and market information are not jointly recorded. The temporal proposition applies only where harvest timing is discretionary and quality develops or becomes observable over time. Estimation has not been benchmarked against independent counts, downstream outcomes are not audited, only one matched dyad is available, and the timing proposition has not been tested on comparable lots. These concepts are testable propositions rather than universal generalizations.

Layer 3 is a future managerial intervention rather than a finding or theory test. The empirical archive identifies specific reconciliation failures; different estimates, unclear cost boundaries, inconsistent quality/damage categories, and source-specific downstream figures; that motivate a transaction-record prototype. The prototype is therefore a design response to observed information gaps, not evidence that formalization improves accuracy, fairness, or profitability. Figure 1 presents the proposed one-page instrument so that the intervention is visible and assessable, while its effectiveness remains outside the claims of this study.

4.9. Practical Implication: A Transaction-Record Prototype

The study derives a one-page transaction record as an evidence-informed future intervention, not as a demonstrated accounting tool. Its purpose is to make visible the information gaps observed in the cases: differences between initial estimates and actual output, source-specific figures, unclear cost boundaries, inconsistent grade/damage classification, and unresolved downstream receipts. Figure 1 shows the actual proposed form. It separately records each party's estimate, negotiated quantity, contract value, payment schedule, actual harvest, quality grades, damaged and discarded fruit, relevant costs by responsible actor, residual recovery, source-reported downstream figures, and reconciliation notes. Source and date fields are included so that the origin and timing of each number remain visible.

Figure 1. Proposed one-page durian tebasan transaction record (unvalidated conceptual prototype).

DURIAN TEBASAN TRANSACTION RECORD

Unvalidated conceptual prototype for co-design and field testing

A Transaction identification	
Transaction ID / orchard location	Owner code / trader code
Contract date / reporting date	Main variety / recorder
B Pre-contract estimates	
Owner estimate / source and date	Trader estimate / source and date
Negotiated quantity / quality cues	Expected grade prices / key risks
C Agreement and payment	
Lump-sum contract value	Down payment / payment date
Final payment / due date	Harvest method / timing
Transferred tasks and rights	Special conditions
D Harvested quantities Each fruit enters one category only	
Actual harvested total (H)	Saleable Grade A (A)
Saleable Grade B (B)	Saleable Grade C (C)
Damaged fruit sold for residual value (R)	Discarded harvested fruit (D)
Unsold harvested fruit at reporting date (U)	Pre-harvest losses (outside H)
Physical check: $H = A + B + C + R + D + U$. Record any discrepancy below.	
E Costs Record amount, responsible actor, source and date	
Guarding / harvesting	Transport / sorting / storage
Other costs / omitted costs	Cost boundary used for partial margin
F Sales and cash Keep revenue and cash receipts separate	
Grade A / B / C sales revenue	Residual sales revenue (count once)
Unsold stock / credit sales included above	Cash collected / cash-receipt date
Owner-reported revenue / source and date	Trader-reported revenue / source and date
G Reconciliation and verification	
Quantity / revenue discrepancy	Classification rule / unresolved items
Partial margin / stated cost boundary	Next-season adjustment / follow-up
Owner initials / date	Trader and recorder initials / date

Sales revenue = grade sales + residual sales; exclude unsold stock and future receipts.

Do not add credit sales again when paid. Partial margin is not verified net profit.

Retain source-specific differences. This form has not been field-tested.

Note: The prototype is derived from empirical reconciliation problems identified in this study. It has not been co-designed with users, field-tested, or shown to improve pricing accuracy, fairness, reconciliation quality, or profitability. It should therefore be interpreted as a future managerial intervention requiring validation.

The form is designed to preserve disagreement rather than erase it. Separate owner and trader estimates allow estimation error to be assessed without assuming that either party's initial number is objectively correct. Separate fields for grade-A/B/C fruit, damaged-but-sold fruit, discarded fruit, owner-reported downstream figures, and trader-reported downstream figures make classification and reporting inconsistencies visible. This design directly responds to the P4–T5 ambiguity, but its usefulness remains untested. Each fruit must enter exactly one physical category: saleable Grade A, B, or C; damaged fruit sold for residual value; discarded fruit; or unsold fruit held at the reporting date. Their sum must equal the actual harvested

total. Pre-harvest losses are recorded separately and excluded from this harvested-total reconciliation. Residual sales must not also enter grade-specific sales. Credit sales form part of sales revenue and must not be added again when cash is collected.

The prototype should be co-designed with orchard owners and traders to determine terminology, sequence, units, access rights, and the minimum information worth recording. Field pilots across several matched transactions and seasons should evaluate completion rates, consistency, accuracy, time burden, user acceptance, and whether the record improves reconciliation or changes decisions. If recording costs exceed decision benefits, the form should be simplified. Group or cooperative use would additionally require confidentiality and data-governance rules. These are validation requirements, not outcomes demonstrated by the present study.

Proposals raised by orchard owners for cooperatives, local auctions, or shared price information may increase buyer alternatives and bargaining capacity. Producer-organization literature provides reasons to test these possibilities (Geffersa & Islam, 2026; Grashuis & Skevas, 2023; Groot-Kormelinck et al., 2022; Tsai & Luh, 2023). The study does not claim, however, that collective organization is necessarily superior. Feasibility depends on supply scale, member trust, quality management, working capital, buyer access, and organizational costs.

5. Conclusion and Recommendations

Empirically, the study documents; at unequal evidentiary depths; that durian tebasan relies on experience-based estimation, selective relevant costs, liquidity considerations, payment controls, harvest-timing choices, and partial residual-value recovery. Deep evidence comes from T4, T5, and P5 verbatim records, while the remaining cases provide supporting or illustrative evidence. The matched P4–T5 transaction is particularly informative because the parties agree on several orchard-stage and cost figures while reporting different downstream figures and an unresolved damaged-fruit classification. Those downstream numbers are therefore treated as source-specific and conditionally reconcilable rather than as verified transaction totals.

Conceptually, the study does not establish a fully distributed accounting system or a general accounting-boundary mechanism. It proposes staged calculative coupling as a bounded extension to vernacular and inter-organizational accounting: uncertain biological signals can become shared-enough calculative objects for contracting without a common accounting infrastructure. The P4–T5 dyad is consistent with a provisional accounting-boundary asymmetry interpretation after control rights shift, but one matched dyad cannot demonstrate recurrence. The temporal quality-risk calculus remains a separate and narrower proposition requiring comparable lot-level evidence before causal or financial claims can be made.

Practically, the evidence identifies what a future record would need to reconcile; it does not demonstrate that the proposed record is effective. Figure 1 provides the unvalidated one-page prototype requested by the logic of the findings. The form should be co-designed and field-tested before wider recommendation. Collective marketing, auctions, or shared price systems likewise remain options for evaluation rather than proven improvements.

For local government and producer organizations, the immediate implication is to support better information and contract clarity without assuming that trader intermediation is inefficient. Training can combine documented estimation, quality grading, simple contracts, and transparent cost categories, while pilot programs can test whether shared records or

collective marketing improve outcomes after accounting for logistics, financing, organizational costs, and enforcement. These proposals remain future interventions whose effectiveness is outside the evidence of the present case study.

6. Limitations and Future Research

The study has six main limitations. First, evidentiary depth is heterogeneous: only T4, T5, and P5 are preserved as verbatim transcripts, whereas T1–T3 and P1 are condensed notes and P2–P4 are owner-side transaction accounts. Numerical balance between five traders and five owners therefore does not imply symmetrical qualitative depth. Second, the sample is small and purposive and includes only one matched orchard-owner–trader dyad. Third, the study does not claim formal theoretical saturation or intercoder-reliability statistics. Fourth, the P4–T5 evidence contains unresolved accounting classifications: A/B/C counts already total 1,680 while 35 damaged fruits are also reported, so the Rp85.55 million downstream figure and Rp27.55 million partial margin are reported arithmetic rather than physically reconciled totals. Fifth, the Rp13.55 million difference between P4 and T5 can reflect recall, timing, coverage, definition, or missing transactions; the data do not identify the cause or demonstrate intentional information asymmetry. Sixth, the study does not independently count fruit, audit full downstream sales, or isolate the financial effect of harvest timing. These limits constrain claims about estimation bias, risk premiums, bargaining rents, accounting-boundary mechanisms, and net profitability.

Future research should follow multiple matched transactions prospectively from orchard inspection through final cash collection. At each stage, researchers should record what information each party actually possesses, independently benchmark fruit counts where feasible, track lot-level quality and damage, identify costs by responsible actor, and reconcile source-specific sales and payment records. Such a design can distinguish genuine information asymmetry from recall differences, timing differences, accounting-boundary definitions, or omitted transactions and can test whether the proposed staged calculative coupling proposition recurs systematically. Comparable-lot tracking is also required to test the temporal quality-risk proposition. Finally, the one-page prototype should be co-designed and evaluated longitudinally or experimentally for usability, recording burden, reconciliation quality, and decision effects before it is recommended as a practical management-accounting tool.

Declaration of AI and AI-assisted technologies in the writing process

During the preparation of this manuscript, the authors used OpenAI ChatGPT to assist with academic English translation, language editing, manuscript organization, and formatting in accordance with the journal template. The authors reviewed and edited the output as needed and take full responsibility for the content of the publication.

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