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WHY COFFEE QUALITY UPGRADING REMAINS PARTIAL: FARMER DECISION-MAKING AND CONSTRAINT RESPONSE MISMATCHES IN EASTERN UGANDA'S COFFEE INNOVATION PLATFORMS

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ABSTRACT

Research on coffee quality upgrading suggests that technical deficiencies interact with the financial, institutional and market conditions under which farmers make decisions. This study examined where farmers perceived major constraint along the coffee value chain, how innovation platforms responded to those constraints, and why improvements remained partial in the Mt. Elgon region of Eastern Uganda. Six focus group discussions involved 43 smallholder farmers drawn from 10 innovation platforms in Kapchorwa, Manafwa and Namisindwa districts. The analysis combined framework-guided value chain mapping, inductive thematic analysis of innovation platform functions and collective action dynamics, and cross case matrix assessing constraint-response alignment. Participants described linked constraints involving unreliable agro-inputs, disease pressure, seasonal labor constraints, premature harvesting, congestion and breakdown of shared pulping equipment, inadequate drying and storage resources, opaque grading, weighing concerns and price volatility. Across the value chain, input uncertainty weakened confidence in further investment; urgent cash needs shortened harvesting and marketing decision horizons; processing delays threatened product quality; and opaque grading reduced the expected return to additional quality-enhancing effort. Participants mainly described platform roles in experiential learning, information exchange, shared assets, bulking and buyer engagement, while also reporting unresolved constraints concerning seasonal liquidity, maintenance, quality assessment, payment timing and rule enforcement. These patterns showed that shared infrastructure could remain unreliable without scheduling, maintenance finance and accountable management, while collective-marketing commitments could weaken when farmers faced urgent household cash needs and uncertain quality rewards. The paper does not claim novelty from identifying the individual constraints. Its contribution is to explain their cross-stage interaction and the recurring constraint-response mismatches through which training, shared equipment and collective marketing address visible problems while leaving important financial and institutional conditions unresolved. This interpretation connects value-chain governance, collective-action scholarship, agricultural-innovation systems analysis and liquidity-constrained farmer decision-making. The findings indicate that platform design should move beyond training-centered responses by diagnosing the mechanism sustaining each constraint and combining technical learning, where feasible, with seasonal-finance options, transparent quality assessment, maintenance governance and workable collective- action arrangements.

Key words: Coffee value chains, collective action, value-chain governance, liquidity constraints, institutional coordination

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INTRODUCTION

Coffee quality upgrading is a long-term concern in Uganda's smallholder coffee sector. Research in eastern Uganda has documented value degradation within the coffee chain [1]. Certification research reports heterogeneous welfare outcomes among Ugandan coffee farmers [2]. Field experiments in Uganda show that improved market access can encourage quality upgrading in agricultural markets [3], while input-market research documents quality uncertainty that can discourage technology use [4]. Together, these studies show that production practices, product assessment and market access influence the value retained at farm level. The present paper does not treat counterfeit inputs, disease pressure, premature harvesting, post-harvest loss, weak bargaining power and price volatility as discoveries. Rather, it examines how these established constraints interact with farmer decision-making and why technical knowledge does not always translate into sustained quality-enhancing practices

The first debate, therefore, concerns the relationship between technical knowledge and farmers' action. Farmers may understand recommended harvesting and processing practices but still act under transport costs, search costs, uncertainty and urgent cash requirements. Uganda coffee farmers' choice between farm-gate and market sales reflects the net effect of price differences and transportation costs [5]. Evidence from agricultural markets also shows that incomplete credit can alter the timing of commodity sales [6], while fixed and variable transaction costs shape market participation more broadly [7]. In the present study, farmers linked premature harvesting and immediate sale to urgent needs. Such practices are therefore examined as potentially liquidity-constrained decisions rather than automatically as evidence of knowledge failure.

The second debate concerns value-chain governance. Global value-chain research directs attention to who sets standards, who assesses compliance, how information is distributed and whether additional effort produces a credible reward [8]. Studies in Uganda, Rwanda, and Ethiopia indicate that certification, buyer and processor relationships, market access and chain organization shape quality incentives and the distribution of benefits [1–3,9,10]. Research on Uganda's coffee cooperatives also shows that farmers organizations are embedded in wider political and commercial relations [11]. Extension advice to pick, pulp, dry and store coffee carefully may therefore have limited traction where assessment is opaque or premium prices are uncertain.

The third debate concerns what innovation platforms and collective organizations can realistically accomplish. Research on Ugandan coffee innovation platforms reports that actor networks, experiential learning and governance arrangements can support knowledge exchange and farmer learning [12,13]. Wider agricultural

innovation systems scholarship describes platforms as spaces for learning, negotiation and coordination, while identifying tensions around power, institutional embedding, resources and sustainability [14–17]. Collective-action research similarly shows that producer organizations can reduce transaction costs and improve market access under some conditions, but may remain vulnerable to delayed payment, uneven payment incentives, distrust and side selling [18–21].

The unresolved issue is therefore not whether individual constraints exist, but how well platform responses address the conditions that keep those constraints in place. This study makes three bounded contributions. Empirically, it examines how input uncertainty, liquidity pressure, shared-asset governance and market opacity were linked in farmers' accounts. Analytically, it uses constraint-response alignment to compare platform functions with the financial, behavioral and institutional conditions associated with each problem. Conceptually, it connects value-chain governance, collective action, agricultural innovation systems and liquidity-constrained farmer decision-making without proposing a new general theory. The study asks: (i) where do farmers perceive the major constraints to coffee quality upgrading, (ii) how do innovation platforms and associated farmer groups respond; and (iii) why do farmers report that improvements remain partial or short-lived.

CONCEPTUAL AND THEORETICAL FRAMING

Technical knowledge and liquidity-constrained decisions

Technical information and knowledge are necessary but may be insufficient where the expected return to a practice depends on input authenticity, the timing of payment, and the ability to postpone sale. Uncertain input quality can reduce confidence in investment even when application knowledge is adequate [4]. Transaction costs influence where Ugandan coffee farmers sell [5], while liquidity constraints and incomplete credit markets influence when agricultural commodities are sold [6,7]. In this paper, farmer decision-making is therefore treated as constrained and temporally situated, not as a binary choice between correct and incorrect behavior.

This distinction matters for quality upgrading. Red-cherry harvesting, careful sorting and delayed sale impose labor or waiting costs before their benefits are realized. When households face school fees, medical expenses and other urgent cash needs, the immediate value of sales may outweigh an uncertain future premium. Farmers' knowledge can therefore coexist with quality-reducing practices because information does not remove the costs and risks of waiting.

Value chain governance and transmission of quality rewards

Global value-chain governance focuses attention on the organization of transactions, the allocation of decision rights and the mechanisms through which standards are

specified and enforced [8]. In coffee chains, quality upgrading is more likely to be sustained where farmers can observe and trust the relationship between additional effort, grading and payment. Evidence from Uganda, Rwanda and Ethiopia shows that certification, market access, processor relations and chain organization influence upgrading incentives and the distribution of benefits [1–3,9,10].

This perspective moves the analysis beyond farm practice. Opaque grading, mixed-quality bulking and unexplained price changes can weaken the expected return to selective picking and careful post-harvest handling. Collective marketing may increase volume and negotiating presence, but it does not by itself alter who controls grading and whether quality premiums are dependable.

Collective marketing, liquidity and relational enforcement

Collective action can reduce per-unit transaction costs, aggregate volumes and strengthen access to higher value markets [18,19, 21, 22, 23]. Yet collective sale also creates costs of coordination, waiting and mutual dependence. In Uganda, cash on delivery increased farmers' willingness to sell through producer organizations, indicating that payment timing is part of the institutional design of collective marketing rather than a secondary operational issue [19]. In Rwanda, double side-selling has been linked to weaknesses in cooperative-member and cooperative-buyer relationships [20], while research on coffee mills shows that competition and relational contracting can shape farmer supply and welfare [24].

These studies suggest that side-selling should not be treated only as indiscipline. Where collective sale delays payment and cannot accommodate urgent cash needs, individual sales may become an understandable exit option. Rules and sanctions matter, but their legitimacy and enforcement also depend on whether the group offers timely and credible benefits.

Shared infrastructure and maintenance governance

Shared pulpers, drying facilities and storage assets can relieve capital constraints, but collective assets require rules governing access, scheduling, contributions, maintenance and accountability. Research on common-property institutions and jointly managed irrigation systems shows that sustainable collective management depends on institutional arrangements, monitoring, responsibilities and the fit between rules and the resource problem [25,26]. This literature concerns different resources, so it is used for its institutional principles rather than as direct evidence about coffee pulpers.

A shared machine can therefore solve one problem while creating another. Equipment ownership may expand processing capacity, but congestion, breakdown and delayed repair can reproduce quality loss if maintenance finance and

responsibility are unresolved. Infrastructure provision and infrastructure governance are analytically distinct.

Innovation platform functions and institutional scope

Innovation platforms can support social learning, brokerage, joint experimentation and coordination among interdependent actors [14–17]. However, institutional embedding and enabling conditions influence whether platform activities contribute to durable change [14,16]. A systematic review of multistakeholder platforms in Sub-Saharan Africa reports substantial attention to learning and knowledge co-creation but a less consistent evidence base for sustained institutional and livelihood effects [17]. Schut and colleagues caution that platforms should not be treated as a universal solution: their appropriateness depends on the problem, actors, resources and institutional environment [27].

The relevant analytical question is therefore not whether an innovation platform is present, but whether its functions are suited to the binding mechanism. Training is well matched to a knowledge deficit. It is less well matched to seasonal liquidity, input regulation, buyer control over grading and maintenance of a collective asset unless actors with the necessary authority and resources are involved.

Integrative conceptual framing: constraint-response alignment

The study uses constraint-response alignment as a mid-range analytical device. A platform response is strongly aligned when it addresses both the visible problem and the mechanism sustaining it. Alignment is weak when the platform function has little leverage over the underlying constraint. A constraint-response mismatch is patterned when the same type of gap recurs across value-chain stages.

This framing integrates four bodies of scholarship. Value-chain governance identifies who controls standards, assessment and rewards. Collective-action theory identifies the conditions under which joint marketing and shared assets can be sustained. Agricultural innovation-systems analysis identifies the brokerage, learning and institutional roles of platforms. Liquidity-constrained decision-making explains why farmers may depart from recommended and collective practices despite understanding them. This framework is not offered as a new general theory; it is a transparent way to connect the empirical matrix to established debates.

MATERIALS AND METHODS

Study area and design

This study was conducted in the Mount Elgon coffee-growing region of eastern Uganda, covering the Kapchorwa, Manafwa, and Namisindwa districts. The sites contained active coffee innovation platforms. A qualitative, cross-sectional, multi-site case-study design was used to examine farmers' accounts of value-chain

constraints, platform responses and decision-making processes. The design supported contextual interpretation and cross-site comparison.

Participants and focus-group discussions

Six independent focus-group discussions were conducted, two per district, involving 43 unique coffee farmers from 10 innovation platforms operating in 10 sub-counties. Each session included six to eight participants, and no farmer attended more than one discussion. District totals were 16 participants in Kapchorwa, 15 in Manafwa and 12 in Namisindwa. These were divided as evenly as possible into two focus group discussions per district. This yielded groups of eight and eight in Kapchorwa, seven and eight in Manafwa, and six and six in Namisindwa. Table 1 shows participant distribution of participants by innovation platform, not by discussion. Participants comprised 51% men, had a mean age of 45 years and 88% were married; 44% had completed secondary education.

Participants were purposively selected to obtain variation in gender, age, and innovation-platform involvement rather than statistical representativeness. Eligibility required active participation in platform-linked coffee activities and at least five years of coffee-farming experience. The research team compiled eligibility lists with support from district innovation-platform coordinators, facilitators and platform members.

Each focus group discussion was facilitated by two trained, bilingual research assistants, one serving as a moderator and the other as note-taker, under the oversight of the principal researcher. Kupsabin was used in Kapchorwa, while Lugisu was used in Manafwa and Namisindwa. Moderators followed the same guide across all six sessions and used neutral probes to seek clarification without suggesting preferred answers. They invited quieter participants to contribute and redirected the discussion when a small number of participants began to dominate. District innovation platform facilitators assisted with logistics but did not moderate the discussions. These research assistants were independent of the project and had no control over participants' access to project services, platform benefits, and other assistance. All discussions were audio-recorded. Bilingual research assistants transcribed the recordings directly into English, after which the principal researcher reviewed the transcripts and, with their support, checked selected passages and quotations against the audio-recording.

Analytical procedure

Analysis proceeded in three linked stages. First, framework-guided content analysis organized transcript material into five stages: inputs and planting material; production and crop management; harvesting and primary handling; post-harvest processing and storage; and marketing and pricing. This approach enabled structured comparison while retaining case-level context [28]. Constraint statements

were coded according to their location in the chain and their reported implications for quality, timing, risk and farmer returns.

Second, inductive thematic analysis identified the functions attributed to innovation platforms and associated farmer groups, including experiential learning, formal training, shared processing, input coordination, savings and credit, collective marketing, buyer engagement, rule setting, enforcement and brokerage [29]. Third, a cross-case matrix compares each constraint with the relevant platform response and classified alignment as strong, partial, and weak. This stage integrated two analytical lenses applied to the same focus group corpus; it was not triangulation across independent stakeholder data sources.

The principal researcher used NVivo 14 to organize, code, retrieve and compare material from the complete six focus group discussions corpus. Coding was guided by a hierarchical codebook comprising parent and child codes, operational definitions, and explicit inclusion and exclusion criteria. Deductive codes organized the material by value-chain stage, while inductive codes captured innovation-platform functions and collective-action processes. The two coding layers were applied to the same transcripts and integrated through a case-by-case constraint-response matrix that compared coded constraints, relevant platform functions and the degree of alignment across district cases. The matrix and three synthesis tables preserved traceability among value-chain categories, platform functions, district cases and illustrative quotations. Research assistants supported the verification of selected translated passages and quotations against the audio recordings but did not independently code transcripts. Formal independent coding review, intercoder reliability testing, and a documented negative-case review were not conducted and therefore not claimed [30]. Ethical approval was obtained from Wageningen School of Social Sciences Research Ethics committee. Project authorizations and field coordination access were obtained from Makerere University's Department of Extension and Innovation Studies project coordination point and district coordination offices. Participation was voluntary. Respondents provided informed consent, and identifying information was removed during transcription and analysis.

RESULTS AND DISCUSSION

Cross-stage interaction rather than isolated constraints

Farmers' accounts described linked constraints across value-chain stages that could compound one another. Unreliable inputs and disease pressure affected production expectations; labor and urgent cash requirements were associated with harvest timing; congestion and equipment failure were associated with post-harvest delay; and opaque grading and volatile prices weakened farmers' confidence that additional effort would be rewarded. Table 2 summarizes these linkages.

Recurrence across districts is used to identify themes that shaped participants' explanations, not to estimate population prevalence.

Collectively, the accounts suggest a plausible cross-stage sequence, but they do not demonstrate that every participant experienced every link or established a causal ordering. Doubts about the input quality reduced expected returns to crop-protection expenditure. Urgent cash needs encouraged earlier harvesting. Congested processing delayed pulping, while opaque grading provided little evidence that additional effort would be rewarded. The analytical point is that constraints at one stage can alter the incentives surrounding decisions at subsequent stages.

Input uncertainty weakened the expected return to technical advice

Participants reported uncertainty about whether agrochemicals were genuine and effective. A Kapchorwa farmer explained, "You can spray, but you are not sure what you bought. Sometimes it is like spraying water." (Kapchorwa, FGD). Farmers also referred to poor-quality seedlings and disease-control constraints. These farmers' experiences align with experimental evidence that uncertainty about input quality can depress expected returns and technology adoption in Uganda [4].

The finding extends the discussion beyond the reported existence of counterfeit or ineffective inputs. Disease pressure increased the need for purchased products, while doubts about authenticity reduced confidence in spending scarce cash on them. Platform training and collective sourcing were reported as addressing knowledge and supplier choice, but participants continued to report uncertainty about input quality. This suggests that product verification lay partly beyond the reported capabilities of the platforms.

Liquidity pressure was linked to departures from quality and collective commitments

Farmers repeatedly linked premature harvesting and early sales to urgent expenditure. One participant stated: "We know you should wait for ripe coffee, but when school fees are needed, you harvest what is there." (Namisindwa, FGD). Another account linked delayed sales with theft and price risk. These findings indicate that farmers knew the recommended practice while being unable and unwilling to wait for its uncertain return.

This was the clearest connection in the data between constrained decision-making and collective action. Quality rules asked members to wait for maturity, while collective marketing asked them to wait for bulking and group sales. Urgent cash needs shortened both horizons. Evidence from Uganda that cash on delivery increases sales through producer organizations reinforces the importance of payment timing [19]. In the present study, savings groups and quality norms offered some support, but participants described the available funds as insufficient for larger

seasonal needs. Their accounts suggest that liquidity pressure raised the private cost of complying with collective arrangements.

Shared equipment remained vulnerable where maintenance governance was incomplete

Farmers valued shared pulping equipment but also described peak-season queues and delayed repairs. A Namisindwa participant observed, “When coffee is ready, everyone wants the machine. You wait, the coffee stays, and quality goes down.” (Namisindwa, FGD). A Manafwa participant added, “We have machines, but when they break down, there is no money to repair quickly.” (Manafwa, FGD). Physical access and functionality were therefore not equivalent.

The platform response addressed capital access but left institutional questions about scheduling, maintenance finance, responsibility and timely repair. Governance research on shared resources shows that collective assets require workable rules, monitoring and responsibility arrangements [25,26]. Applied cautiously to coffee processing, this suggests that the problem was not simply insufficient hardware. Equipment provision without maintenance governance could shift the bottleneck from ownership to reliability and peak-season access.

Opaque grading disrupted the transmission of quality rewards

Marketing generated strong expressions of dissatisfaction. A farmer stated, “You clean your coffee well, but when buying, they mix it or grade it wrongly.” (Namisindwa, FGD). Another reported, “Buyers change prices without explanation. Today it is good, tomorrow it is very low.” (Kapchorwa, FGD). These perceptions identify a value-chain governance issue. Farmers may have weaker incentives to incur additional harvesting and processing costs when the connection between effort, assessment and payment is not observable. Bulking and buyer engagement can increase negotiating presence, but they do not necessarily change who grades the coffee, how quality is measured and how disputes are resolved. The mismatch was therefore between a coordination response and a governance problem concerning control over assessment and reward [9,10,15].

Participants emphasized learning and brokerage roles of innovation platforms

Participants described platforms as useful for demonstrations, farm visits, information exchange, shared equipment and collective marketing. One Kapchorwa participant stated, “when you see another farmer’s garden, you understand better than meetings.” (Kapchorwa, FGD). Another said, “when we bulk together, buyers listen more.” (Kapchorwa, FGD). These accounts are consistent with the Ugandan evidence on network-based knowledge sharing and experiential learning in coffee innovation platforms [12,13].

Participants' accounts emphasized learning, brokerage and coordination roles and described more limited platform capacity in seasonal finance, input regulation, asset, maintenance, market assessment and enforcement. This boundary is consistent with innovation platform research: platforms can facilitate interaction but do not automatically possess the authority, finance and institutional reach to address every constraint [14-16,17,27].

Collective marketing was reported as vulnerable to weak enforcement and urgent cash needs

Side-selling illustrates the interaction between household liquidity and group governance. One participant explained, "When money is needed quickly, some sell alone even if we agreed to sell together" (Kapchorwa FGD). Rules also carried out social costs. Another participant explained, "Even if rules are there, no one wants to punish neighbors (Manafwa FGD). The accounts indicate that formal rules alone did not make enforcement credible.

Collective-action research shows that joint marketing depends on timely benefits, trust, monitoring and workable sanctions [18,19,21–23]. Coffee-chain research also shows that informal and relational arrangements matter where formal enforcement is limited [24]. In the present study, urgent cash needs appeared to reduce the private value of compliance, while socially difficult sanctions appeared to reduce the group's capacity to deter individual exit. The two conditions may therefore have reinforced one another.

Patterned constraint-response mismatches and the paper's contribution

Table 3 integrates the findings. Three recurrent mismatches were visible in the analysis. First, training addressed knowledge but not the liquidity and market conditions governing application. Second, shared equipment addressed asset access but not maintenance, scheduling and accountability. Third, collective marketing addressed scale and bargaining but not necessarily immediate payment, transparent grading and enforceable commitments. They are described as patterned mismatches because the platform response repeatedly addressed a visible part of the problem while farmers continued to report an unresolved financial and institutional condition.

The empirical contribution of this paper is to interpret how constraints were linked across value-chain stages. The analytical contribution is to show how the same platform could be perceived as useful while remaining only partly aligned with reported upgrading constraints, because different functions require different authority and resources. The theoretical contribution is integrative rather than generative: value-chain governance illustrates the quality-reward problem; collective-action theory informs interpretation of compliance and side-selling; innovation-systems work clarifies platform functions and institutional limits; and

constrained-decision research helps to explain why immediate household needs may override long-term quality and group commitments.

The district matrices also caution against homogenization: Kapchorwa accounts emphasized input distrust, liquidity pressure, grading and price volatility; Manafwa accounts emphasized machine maintenance, labor and poor bargaining; and Namisindwa accounts emphasized premature picking, processing queues and buyer organization. These differences support analytical comparison across the three cases but do not justify national generalization.

Overall, the findings indicate that responses should be matched to the mechanism sustaining each constraint. Input quality uncertainty requires stronger product verification, accountable sourcing arrangements and engagement with responsible regulatory actors. Liquidity-related premature harvesting and individual sales require seasonally appropriate finance, timely payment and marketing arrangements that reduce the cost of waiting. Shared processing equipment requires transparent scheduling, maintenance funds, clear responsibility and accountable management rather than equipment provision alone. Opaque grading and uncertain quality rewards require transparent assessment procedures, accessible quality information and credible mechanisms for resolving disputes. Collective-marketing arrangements require timely benefits, legitimate rules and workable enforcement mechanisms.

Study limitations

The study had four limitations. First, the analysis contains farmers' perspectives but no independent accounts from traders, buyers, processors, extension personnel, regulators and platform facilitators. Statements concerning grading, weighing, input quality and institutional performance should therefore be read as reported experiences rather than externally verified facts. Second, qualitative data cannot establish that platform participation caused changes in quality, income and behavior. Third, focus group interaction, translation and facilitator positioning may have shaped what was said and how it was rendered in English. Fourth, food security, dietary intake and nutrition were not directly measured. The study therefore makes no empirical claim about food-security outcomes. Its strengths include cross-district comparison, chronological value-chain structure and explicit linkage of constraints, platform functions and perceived outcomes.

CONCLUSION AND RECOMMENDATIONS FOR DEVELOPMENT

Participants described coffee quality upgrading as involving linked constraints across value-chain strategies rather than only independent technical deficits. Their accounts suggested that knowledge of recommended practices and access to collective learning could remain insufficient where input authenticity was doubtful, urgent cash needs shortened decision horizons, shared equipment lacked reliable

maintenance arrangements and quality assessment did not transmit credible rewards. Innovation platforms were reported to support experiential learning, information exchange, shared assets, bulking and buyer contact, but those functions did not consistently address the financial, governance and enforcement conditions associated with quality loss.

The paper makes three bounded contributions. First, it provides an empirical interpretation of how farmers linked constraints from input acquisition through marketing. Second, it identifies recurring constraint-response mismatches, particularly knowledge without adequate liquidity, infrastructure without maintenance governance and collective marketing without timely payment, transparent grading and credible enforcement. Third, it integrates established value-chain, collective-action, innovation- systems and constrained-decision perspectives without claiming that the individual constraints and the analytical device constitute a new general theory.

The findings support a diagnostic implication rather than proof of intervention effectiveness. Extension and innovation-platform programs should identify the conditions that appear to remain unresolved before selecting an intervention. Technical training is appropriate where knowledge is deficient, but it should not be expected to substitute for seasonal liquidity, input verification, functioning asset governance and market transparency. Coffee programs could therefore pilot carefully govern seasonal-finance arrangements; pair shared equipment with scheduling, maintenance funds and assigned responsibilities; test understandable and contestable grading and weighing procedures; and design collective-marketing rules around payment timing, member incentives, sanctions and grievance processes.

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Table 1: Distribution of participants by district, Sub County and innovation platform

District	Sub County/ municipal divisions	Innovation Platform	Participants
Kapchorwa	Municipality-Western Division	Arokwo Coffee IP	6
	Kabeywa	Kabeywa Coffee IP	5
	Municipality-East and Central Divisions	Mt. Elgon women in Coffee IP	5
Manafwa	Butta	Butta Coffee IP	7
	Bukhofu	Bukhofu Coffee IP	4
	Nalondo	Busyula Coffee IP	2
	Bukhofu	Bukusu Coffee IP	2
Namisindwa	Bukhoho	Bukhoho Coffee IP	4
	Mukoto	Mukoto Coffee IP	4
	Bumbo	Bumbo Coffee IP	4
3 districts	10 Sub Counties/municipal divisions	10 innovation Platforms	43

Table 2: Value-chain constraints, decision implications and cross-district patterns

Value chain stage	Recurrent farmer reported constraint	Decision and quality implication	Cross-district pattern
Input and planting material	Counterfeit or ineffective agrochemicals; unreliable seedlings; high input costs	Confidence in purchasing inputs; inconsistent crop protection	Reported across districts
Production	Disease pressure; inconsistent pruning; labor and extension limitation	Yield and quality risk; uneven implementation of recommended practice	Reported in all districts
Harvesting	Urgent cash needs; labour shortages; theft and price risk	Premature picking; mixing ripe and unripe cherries; early sale	Liquidity pressure reported in Kapchorwa and Namisindwa; labor constraints reported in Manafwa

Post-harvest	Pulping congestion; machine breakdown; drying and storage limitations	Delayed pulping and drying; deterioration and rejection risk	Long queues reported in Kapchorwa and Namisindwa; maintenance failure reported in Namisindwa
Marketing	Opaque grading; weighing concerns; price volatility; weak bargaining	Uncertain return to quality; individual sales; volume- oriented decisions	Reported across districts; grading concerns reported in Kapchorwa and Namisindwa

Table 3: Innovation-platform responses and constraint-response alignment

Constraint mechanism	Innovation Platform response	Alignment assessment	Reason for assessment
Input uncertainty	Training, collective sourcing; peer verification	Partial	Participants reported learning and sourcing activities, but input reliability and regulation remained outside reported platform control
Disease pressure and agronomic constraints	Demonstrations, peer learning and extension	Partial	Learning activities addressed knowledge needs, but participants continued to report input, labor and cash constraints
Liquidity-induced premature harvesting	Quality rules, savings groups and collective-marketing norms	Weak to partial	Participants described available finance as insufficient for urgent seasonal needs; delayed group sale increased waiting costs
Pulping congestion and breakdown	Shared equipment and scheduling attempts	Partial	Participants reported unresolved maintenance finance, responsibility, repair and peak-season capacity
Opaque grading and buyer power	Bulking, buyer engagement and market information sharing	Weak	Participants described limited group control over grading, weighing and price determination

Side-selling and quality mixing	Group rules and sanctions	Weak-partial	Participants described sanctions as socially difficult to apply, while urgent cash needs favored individual sale
Post-project reversion	Training, brokerage and temporary support	Weak	Participants reported that some practices and services were difficult to sustain after external support ended

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