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LOCAL SALES CHANNELS, MARKET INFORMATION ACCESS AND MARKET SUPPORT AMONG SHEA SELLERS IN NORTHERN UGANDA

^aRobert Ochago*, ^bAlfred Drasiku

^a Directorate of Graduate Training, Research and Innovation, Muni University, P. O. Box 725, Arua City, Uganda.

^b Community Empowerment for Rural Development (CEFORD), P.O. Box 303, Arua City, Uganda.

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ABSTRACT

Seller-level evidence from Uganda's Eastern African shea system rarely integrates products, outlets, customer locations, market-information sources, and marketing-service reach. This seller-focused secondary analysis profiled 111 respondents reconstructed as shea sellers from an April 2025 cross-sectional survey of 266 shea value-chain actors in Arilo Sub County, Uganda; sellers were not sampled as a separate population. Descriptive statistics and respondent-level aggregation were used for multiple-response items. Parish variation in a three-category market-information measure was examined with Pearson's chi-square test, Cramér's V, and a fixed-margin Monte Carlo check. Direct sales to local buyers or consumers and local community markets were each reported by 110 shea sellers (99%). Seventy-one shea sellers (64%) had no current market information; among the 40 with current or intermittent information, 34 (85.0%) relied on fellow producers and community networks as a source. Most shea sellers reported no marketing organization (97%), no marketing training (90%), and no external marketing support (99%). Market-information access differed by parish, χ^2 (4, n = 111) = 17.24, p = 0.0017, Cramér's V = 0.279; the Monte Carlo procedure produced p = 0.0019. The findings provide a seller-specific diagnosis of dominant local outlets, information access, and limited marketing-service reach. Agricultural extension can use this profile to test credible information services, practical marketing skills, and locally appropriate linkage mechanisms.

Corresponding Author: Robert Ochago

Email: ochagor@gmail.com

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INTRODUCTION

Selling identifies participation in exchange, but it does not by itself establish access to diverse buyers, reliable information, and favorable transaction conditions. Small-scale shea sellers may transact regularly while depending on a narrow outlet set, incurring search and transport costs, and making decisions with limited information. Research on smallholder markets therefore distinguishes participation from the transaction costs, information conditions, and institutional arrangements surrounding exchange (Barrett, 2008). This distinction is relevant to agricultural extension. Pluralistic advisory

systems may support production, learning, organization, information access, and relationships among producers, processors, shea sellers, service providers, and buyers as well as production (Birner et al., 2009; Faure et al., 2012). Shea seller-facing services can include transaction records, buyer identification, and verification of market information (Ferris et al., 2014). Their relevance depends on the products, outlets, customers, and information sources observed among the intended users rather than on a standard intervention package. Market information can reduce uncertainty about prices, demand, buyers, and product requirements

when it is timely, credible, and usable (Chen and Tang, 2015). Evidence from Niger indicates that communication technologies can reduce price dispersion under market conditions (Aker, 2010). Broader reviews show that infrastructure, trust, scale, and complementary institutions shape whether digital and conventional information services are used effectively (Abate et al., 2023; Nugroho, 2021). Peer and community networks may therefore provide important communication channels, but their prominence alone does not establish the accuracy or economic value of the information transmitted.

Organization and training are additional components of marketing support. Collective action may facilitate aggregation, information exchange, and market contact, although outcomes depend on governance, incentives, and sustained participation (Barham and Chitemi, 2009; Markelova et al., 2009). Evidence from Uganda likewise shows that producer-organization interventions do not generate uniform market outcomes across settings (Hill et al., 2021). In this study, organization membership, training, and external support are treated as indicators of service reach, not as direct measures of market performance.

Taken together, product and outlet structure indicate where exchange occurs; market information access and source composition indicate how sellers obtain market signals; and organization, training, and external support indicate the reach of formal marketing services. Examining these domains jointly provides a service-diagnostic basis for identifying extension functions that warrant local assessment without treating service exposure as evidence of market performance.

Uganda lies within the East African range of *Vitellaria paradoxa subsp. nilotica*. Uganda-specific studies have examined value addition among collectors, actor competitiveness, and choices among marketing channels (Akatwetaba et al., 2023; Akatwetaba et al., 2024; Akatwetaba et al., 2024). Sector assessments also identified coordination, marketing capacity, and access to market information as practical concerns (Asiimwe, 2020; Gerold et al., 2021; Kerver and van Hal, 2020). These sources provide limited integrated seller-level evidence on products marketed, marketing experience, sales channels, customer locations, price basis, information sources, requested support, and spatial variation within a local seller group. An earlier paper from the same April 2025 parent survey used the full

sample of 266 actors to examine overlapping value chain roles, broad support gaps, seller-versus-non-seller differences in market-information access, and full sample exploratory models (Ochago, 2026). The present analysis is restricted to the 111 respondents reconstructed as shea sellers. Some descriptive indicators derive from the same parent survey, but this paper focuses on seller-specific products, marketing experience, sales channels, customer location, price basis, information sources, requested support, perceived local demand, and parish variation; it does not repeat the earlier role-overlap analysis, seller-versus-non-seller comparisons, or full-sample exploratory models. Its objectives were to (1) describe products marketed, marketing experiences, sales channels, customer locations, and price bases; (2) assess market-information access and sources, organization membership, training, external support, requested support, and perceived local demand; and (3) test whether market-information access varied across the three study parishes. The primary research question was: What market-facing conditions characterize the reconstructed shea seller subset, and how does market-information access vary across the three study parishes? The parish comparison in objective 3 was the only inferential analysis; the other objectives were descriptive.

METHODOLOGY

Study design and setting

This seller-focused secondary analysis used data from a cross-sectional, interviewer-administered survey conducted in April 2025 in Arilo Sub County, Yumbe District, Uganda. The parent dataset comprised 266 complete interviews with shea value-chain actors. The total sample comprised 111 respondents subsequently classified as shea sellers.

Sampling and participants

Initial lists obtained from UBOS (2024) contained 808 farmers (potential shea value chain actors): 185 in Lulurunga, 400 in Joke, and 223 in Tuliki. Eligibility verification with Arilo Sub County and local council structures reduced the sampling frame to 582 eligible actors. Yamane's finite-population formula: $n = N / [1 + N(e^2)]$ (Ewim et al., 2022), produced 237.07 at a 5% precision parameter; the calculated minimum was rounded up to 238 interviews. The fractional systematic-

sampling interval was $k = 582/238 = 2.445$. A random start was generated in Microsoft Excel, after which respondents were selected from the ordered frame using the fractional interval. Before systematic selection, the validated frame was ordered alphabetically by respondent name. Before fieldwork, a contingency sample of 28 eligible actors was prospectively drawn from the same validated frame using the same eligibility criteria and prespecified systematic-sampling procedure, yielding a total field sample of 266. The additional actors were prospectively sample participants, not post-hoc replacements. All 266 selected actors consented to participate and completed the interview, and no substitutions were made. Because 238 represented the calculated minimum sample size rather than a fixed analytical cap, all 266 eligible actors were retained in the parent dataset, corresponding to a response rate of 100%.

Advance mobilization was conducted through parish and village local government structures. Two weeks before fieldwork, the research team and a field contact shared the sampled lists and proposed field schedule with the relevant Local Council 2 leaders, who coordinated with the Local Council 1 leaders responsible for the sampled villages. Selected respondents were notified in advance and reminded one week before fieldwork and again on the eve of data collection, while LC 1 leaders assisted enumerators in locating selected households. These arrangements facilitated respondent contact and household location; participation remained voluntary. Shea sellers were not sampled separately. Seller status was reconstructed from three non-exclusive occupation fields (Occupation1, Occupation2, Occupation3). A respondent entered the seller subset when at least one field recorded shea selling. This rule identified 111 shea sellers among 266 parent-survey records.

Data collection

Trained interviewers administered a structured questionnaire face-to-face. The instrument was prepared in English, with oral interpretation into Aringa when required. Interviews generally lasted 45 to 55 minutes. Before the main survey, the questionnaire was tested with 20 respondents in Midigo Sub County to assess question clarity, sequencing, response options, interview duration and consistency of oral interpretation. Field supervisors reviewed completed questionnaires daily for completeness and internal consistency and discussed

identified queries with interviewers. Enumerators were bilingual residents who spoke Aringa, lived in the study area, and were familiar with the shea enterprise. During training, pretesting, debriefing, and follow-up field sessions, enumerators, the field contact, and researchers agreed appropriate Aringa wording for key questions and market-related terms. Agreed wording was summarized in individual enumerator notebook aids, while practice administration and follow-up discussions were used to resolve uncertainties and reinforce consistent procedures.

The seller-related modules recorded products marketed, years of marketing experience, sales channels, primary customer location, price basis, market-information access and sources, organization/network membership, marketing training, external marketing support, requested support, and perceived local demand.

Variables and data preparation

Multiple-response fields were aggregated at respondent level. Each category was counted once per seller when it appeared in any relevant field; percentages for these items may therefore exceed 100%. Sales channels and primary customer location were retained as separate questionnaire constructs even though both yielded 110 of 111 responses in their respective local categories. The questionnaire did not further define whether “local community markets” denoted a formal physical marketplace or broader local trading location; the category is therefore interpreted only as the recorded customer-location response. Once the response coded “not applicable” was excluded from the price-basis denominator, 110 valid responses remained. Market-information access was recorded from the questionnaire item “can you access market information (e.g., price trends, demand forecasts) for shea products?” using three original response categories: “Yes, I have access to current market information,” “sometimes, but it is not reliable,” and “No, I do not have access to current market information.” These were retained for analysis as current information, unreliable information, and no current information, respectively. The questionnaire specified neither a separate reference period nor a formal operational definition of “reliable” beyond these response labels. Twenty-eight sellers who reported no current market information nevertheless had information-source codes, indicating inconsistent implementation of the questionnaire skip pattern.

Information-source summaries were therefore restricted to the 40 sellers who reported current; source codes attached to the 28 “not current information” cases were excluded from the source denominator because they were inconsistent with the gating response.

Statistical analysis

Frequencies (counts), percentages, and respondent-level mention percentages described the seller subset. Pearson's chi-square test assessed the association between parish and the three-category market-information variable, with Cramér's V reported as the measure of association. Two of the nine expected frequencies were below five (minimum expected count = 1.46). Analyses were conducted in IBM SPSS Statistics version 27 and Python 3.13.5. Sparse-cell sensitivity was assessed using a fixed-margin Monte Carlo check of Pearson's chi-square, implemented with SciPy 1.17.0 random_table.rvs using 2,000,000 simulated tables and seed 20260718.

RESULTS

Seller profile

The reconstructed seller subset comprised 111 respondents. Of the respondents, 66% were women,

95% were married, and 87% had primary education or less. Mean age was 37.5 years (SD = 15.8), with a median of 33 years and a range of 18 to 78 years (Table 1).

Table 1. Characteristics of the respondents, n = 111.

Characteristic	Statistic	Percent
Seller subset size	111	100
Female	73	65.8
Male	38	34.2
Married	105	94.6
Primary education or less	97	87.4
Mean age, years	37.5	—
Age standard deviation, years	15.8	—
Median age, years	33	—
Age range, years	18–78	—

Note. A dash indicates that a percentage is not applicable.

Products marketed and marketing experience

Sellers collectively reported several shea product forms. Shea oil was mentioned by 72 shea sellers (65%) and raw shea nuts by 70 (63%). Nine shea sellers (8%) reported shea butter, and one (1%) reported shea cake. 51 shea sellers (46%) had seven or more years of involvement in shea marketing (Figure 1).

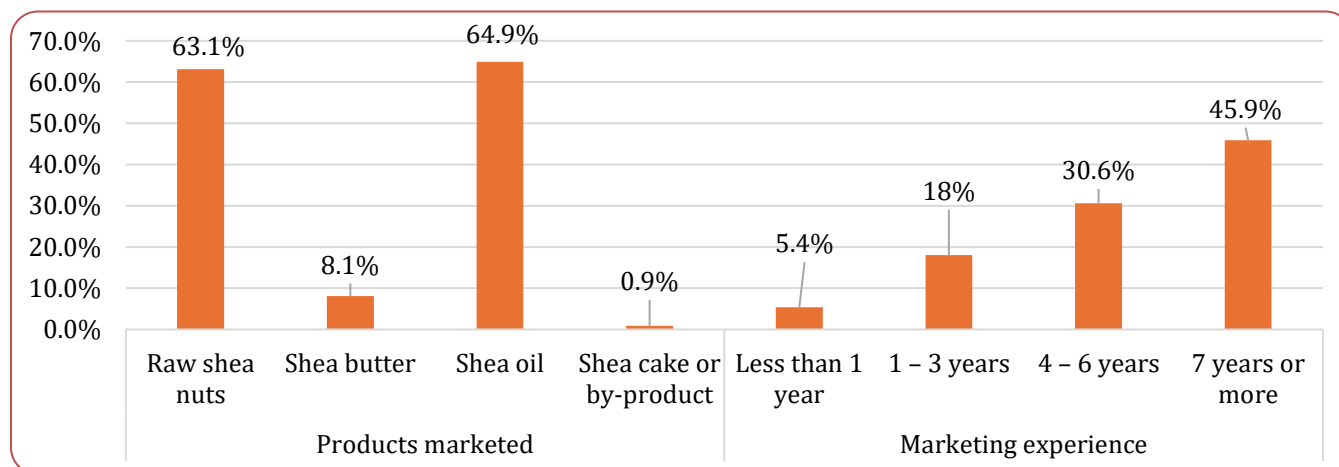


Figure 1. Products marketed and duration of shea marketing experience among shea sellers.

Note. Products marketed were recorded as a multiple-response item; categories are not mutually exclusive, and percentages are respondent-level case percentages. Marketing experience was a single-response item.

Sales channels, customers and price basis

Direct local exchange dominated the recorded channel profile. Direct sales to local buyers (or consumers) were reported by 110 shea sellers (99%). No seller selected the predetermined “middlemen” sales channel category. One seller also reported a cooperative channel, and one

reported an international buyer channel. Primary customer location was similarly local: 110 of 111 sellers (99%) identified local community markets. Among the 110 responses regarding price setting, 81 shea sellers (74%) referred to market demand and competition, 26 (24%) to production costs, and 3 (3%) to a fixed price (Table 2).

Table 2. Sales channels, primary customer location and price basis among shea sellers, n = 111.

Domain	Category	Percentage
Sales channels	Directly to local buyers or consumers	99.1
	Middlemen or traders	0.0
	Cooperatives or associations	0.9
	Export or international buyers	0.9
Customer location	Local community markets	99.1
	Nearby towns or cities	0.0
	International buyers	0.0
	Other	0.9
Reported price basis	Market demand and competition	73.6
	Production costs	23.6
	Fixed price	2.7

Note. Sales-channel categories were non-exclusive and are reported as respondent-level case percentages. Primary customer location was summarized as the recoded primary category. Price-basis percentages exclude one non-applicable response (valid n = 110).

Table 3. Market-information access and information sources among shea sellers, n = 111

Domain	Category	Percentage
Market-information access	Current market information	27.9
	Sometimes available but unreliable	8.1
Information sources among shea sellers with some access	Fellow producers or community networks	85.0
	NGOs or development organizations	12.5
	Government reports or publications	2.5
	Traders or middlemen	2.5
	Associations or cooperatives	0.0
	Online resources or social media	0.0

Note. Market-information access percentages use n = 111. Information-source percentages use n = 40 sellers reporting current or unreliable market information; source categories are non-exclusive and percentages are respondent-level case percentages

Table 4. Marketing support conditions, requested support, and perceived local demand among sellers, n = 111

Domain	Category	Percentage
Marketing support conditions	No marketing organization or network	97.3
	Network connecting producers and buyers	2.7
	No marketing training or skills	90.1
	Informal marketing knowledge	7.2
	Formal marketing training	2.7
	No marketing support	99.1
	NGO or cooperative marketing support	0.9
Requested support	Marketing and branding training	76.6
	Advertising or promotion finance	45.9
	Infrastructure	10.8
	Market information or market linkages	9.9
	Wholesale or export market access	4.5
	Other	0.9
Reported local demand	High demand	65.8
	Moderate demand	32.4
	Low demand	1.8

Note. Organization or network membership, marketing training, external support, and perceived local demand were recorded as single-response variables. Requested support was a multiple-response item; categories are not mutually exclusive, and percentages are respondent-level case percentages.

Market-information access and sources

Seventy-one shea sellers (64%) reported no current market information, 31 (28%) reported some access, and nine (8%) described their access as intermittent. Among the 40 sellers with a degree of access, 34 (85%) identified fellow producers and community networks as information sources. Five sellers (13%) mentioned NGOs and other development organizations, while government and trader sources were each mentioned by one seller (3%) (Table 3).

Marketing support, requested support, and perceived local demand

Reported reach of the listed marketing services was limited. A total of 108 shea sellers (97%) belonged to no organization assisting with marketing, 100 (90%) reported no marketing training, and 110 (99%) reported no external marketing support. Marketing and branding training was

the most frequently requested support, mentioned by 85 shea sellers (77%), followed by finance for advertising, mentioned by 51 (46%). Reported local demand was rated high by 73 sellers (66%), moderate by 36 (32%) and low by 2 (2%) (Table 4). The integration of training, external support, requested support, and the demand profile are reported here for the seller subset.

Parish variation in market information access

Market information access differed across the three parishes. The proportion reporting no current information was 86% in Joke, 78% in Lulurunga, and 51% in Tuliki. Pearson's chi-square test showed an association between parish and information access, χ^2 (4, $n = 111$) = 17.24, $p = 0.0017$, with Cramér's $V = 0.279$. The fixed-margin Monte Carlo procedure yielded a similar p-value, $p = 0.0019$, supporting the same conclusion of non-independence in this sample (Table 5).

Table 5. Market information access by parish among shea sellers, $n = 111$.

Parish	Current information, n (row %)	Intermittent or unreliable, n (row %)	No current information, n (row %)	Total, n
Joke	3 (10.7)	1 (3.6)	24 (85.7)	28
Lulurunga	1 (5.6)	3 (16.7)	14 (77.8)	18
Tuliki	27 (41.5)	5 (7.7)	33 (50.8)	65
Total	31 (27.9)	9 (8.1)	71 (64.0)	111

Note. Percentages are calculated within parish, except for the total row. Pearson's χ^2 (4, $n = 111$) = 17.24, $p = 0.0017$, Cramér's $V = 0.279$. Two of the nine expected frequencies were below five: Joke x unreliable (expected = 2.27), and Lulurunga x unreliable (expected = 1.46). A fixed-margin Monte Carlo check of Pearson's χ^2 , (based on 2,000,000 tables generated using SciPy 1.17.0 random_table_rvs with seed 20260718) yielded $p = 0.0019$, supporting the same conclusion of non-independence in this sample.

DISCUSSION

The sellers' subset was active in exchange, but its reported outlets were overwhelmingly local. Direct sales to local buyers were reported by 110 of 111 sellers, while the same number identified local community markets as their primary customer location. These variables capture related but distinct aspects of exchange: one records the sales channel, whereas the other identifies the principal customer location. They indicate limited channel diversity rather than the performance of local outlets. Only one cooperative or association channel and one export or international buyer channel appeared. By separating channel, customer location and price basis, the analysis adds local detail to Uganda-specific research on shea marketing arrangements (Akatwetaba et al., 2024). A separate northern Uganda study reported concentration among shea processors (Akatwetaba et al., 2024); the present reported price basis categories should therefore not be interpreted as direct evidence of seller bargaining power.

The highly local outlet profile was accompanied by restricted market information access. Seventy-one sellers reported no current market information. Among the 40 with current or intermittent information, 34 identified fellow producers and community networks as a source. Peer networks therefore formed the main information infrastructure and may provide a route through which dated price information, buyer details, and source-verification procedures could be tested. Government, development-organizations, and trader sources were reported by fewer respondents, while association or cooperative and online sources were not reported. The survey did not assess information timeliness, credibility, and actual use, but the pattern is consistent with evidence that information services depend on content, trust, infrastructure, and complementary institutions (Abate et al., 2023; Aker, 2010; Nugroho, 2021).

The information-access pattern coincided with limited reported reach of formal marketing services. Most sellers

reported no marketing organization or network (97%), no marketing training (90%), and no external marketing support (99%). Marketing and branding training was requested by 77%, and finance for advertising by 46%, identifying areas for service assessment. Such support could be linked to transaction recording, customer identification, product presentation, and comparisons of information sources. Collective marketing and organizational development may support aggregation and market contact, but their performance depends on governance, incentives, participation, and assigned functions (Barham and Chitemi, 2009; Hill et al., 2021; Markelova et al., 2009). These preferences therefore identify priorities for testing rather than evidence of intervention effectiveness. With only 2.7% reporting a marketing organization or network, group-based approaches would also require institution-building and explicit attention to governance and participation. The seller profile also has implications for delivery service. Women represented 66% of the subset and 87% had primary education or less. These characteristics do not establish literacy constraints or gender-specific barriers, but they support testing information and training formats that are accessible across educational levels and responsive to the high participation of women in this seller subset. The aggregate conditions also varied spatially. The proportion reporting no current market information was 51% in Tuliki, 78% in Lulurunga, and 86% in Joke. The association was supported by Pearson's chi-square test, χ^2 (4, $n = 111$) = 17.24, $p = 0.0017$, Cramér's $V = 0.279$, and the fixed-margin Monte Carlo check, $p = 0.0019$. The result identifies spatial variation but does not establish its source. Follow-up assessments should examine buyer presence, transport, communication networks, organization activity, and service contact before geographically targeted responses are designed. Overall, the findings provide a shea seller-specific diagnosis of products marketed, marketing experience, outlet use, customer location, price basis, information access and sources, marketing-service reach, requested support, perceived demand, and parish variation.

This analysis extends the earlier full-sample study by examining these domains within the reconstructed seller subset; the earlier paper centered on role overlap, seller-versus-non-seller information differences, and exploratory models (Ochago, 2026). Active local exchange thus coexisted with limited reported outlet alternatives, restricted access to current information, reliance on peer

networks, and limited reach of the listed marketing services.

Implications for agricultural extension

Agricultural extension planning should begin with seller segmentation by product, outlet, customer type, season and information source. Information services can use peer networks already present in Arilo while adding source dates, buyer details and procedures for comparing prices and product requirements. Practical training should focus on transaction records, customer identification, product presentation and verification of market information. Potentially lower-cost steps include testing dated, source-attributed information and practical marketing training through existing peer networks. More resource-intensive responses, including collective marketing, digital platforms, buyer linkage, promotional finance, require local trials rather than routine adoption. Pilot assessments should document participation, implementation costs, transaction volumes, prices, payment timing, repeat buyers, and the distribution of benefits. Extension personnel can coordinate diagnosis, information verification, practical marketing learning, and local learning processes, while finance, infrastructure, quality assurance, and buyer relations require collaboration with specialist actors. Potential collaborators include local-government services, producer organizations, buyers, financial service providers, and NGOs, depending on the function being tested.

Limitations

This seller-focused secondary analysis has three limitations. First, seller status was reconstructed from occupation fields rather than from a separately sampled seller frame, which may have led to omission or misclassification of some occasional sellers. Second, the English questionnaire was orally interpreted into Aringa using agreed wording aids, but oral interpretation may still have introduced variation. Finally, the market-information measure in skip-pattern implementation; therefore, source-specific analyses were conservatively restricted to sellers reporting current or intermittent access.

CONCLUSION

The surveyed shea sellers operated predominantly through direct local sales and community markets. Most had no current market information, and those with some access relied mainly on fellow producers and community networks. The reported reach of marketing

organizations/networks, training, and external marketing support was limited, while market-information access varied across the three parishes. The paper adds a detailed seller-level profile of products, channels, customer locations, information sources, requested support, and spatial variation to the existing Uganda shea literature. The findings support targeted assessment of credible information services and practical marketing capabilities within the channels sellers already use.

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