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Self-help group-linked extension interventions for collective empowerment of women in agriculture

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Abstract

Women produce an estimated 70-80% of food crops in northern Uganda yet control less than 15% of formal agricultural advisory contacts, a disconnect that perpetuates low productivity and limited market participation ^[1]. This research examined how self-help group (SHG) platforms linked with extension services affected collective empowerment outcomes among 348 women farmers across 42 SHGs in the Acholi sub-region between April 2021 and September 2023. A Women's Agricultural Empowerment Index (WAEI) measured eight dimensions: agricultural knowledge, decision-making autonomy, market access confidence, financial literacy, leadership participation, technology adoption, collective bargaining, and extension service demand. Two-way ANOVA showed that both SHG participation duration and extension contact intensity had significant main effects on empowerment scores ($p < 0.001$), with a significant interaction ($F(3,340) = 14.27, p < 0.001$). Women with over two years of SHG membership and high extension contact scored a mean composite of 74.1 compared to 23.8 among those with less than six months and low contact. The largest individual dimension gains appeared in leadership participation (+52.9 points) and market confidence (+52.1 points), suggesting that the collective platform amplifies empowerment pathways that individual extension contact alone rarely activates.

Keywords: Self-help groups, women empowerment, agricultural extension, collective action, gender equity, rural livelihoods, Acholi sub-region, extension linkage, women farmers, Uganda agriculture

Introduction

The problem is not that women farm. It's that the systems designed to support farming weren't designed with women in mind. Across sub-Saharan Africa, agricultural extension services have historically been structured around male household heads, delivered during hours that conflict with women's care responsibilities, and focused on cash crops over the food crops that women predominantly manage ^[2, 3]. In Uganda's northern districts, where the legacy of a two-decade armed conflict left many women as de facto household heads, this mismatch is especially pronounced. A 2021 survey across the Acholi sub-region found that only 12.8% of women reported any contact with a government extension worker in the preceding year, compared to 41.3% of men ^[4].

Self-help groups offer a structural workaround. By pooling women into groups of 10-15 members who meet regularly for savings, mutual support, and collective economic activity, SHGs create a ready-made platform for delivering extension content to multiple women simultaneously ^[5]. The group setting also activates empowerment pathways—leadership practice, collective bargaining, joint decision-making—that individual farm visits can't replicate. Evidence from India, where the SHG model originated, shows that group-linked extension raised women's technology adoption rates by 25-40% compared to individual advisory approaches ^[6, 7].

But evidence from East Africa remains thin, and northern

Uganda's post-conflict context introduces variables—disrupted social networks, land tenure insecurity, trauma-related barriers to collective action—that Indian models may not account for ^[8]. This research investigated whether SHG-linked extension interventions could produce measurable empowerment gains among women farmers in the Acholi sub-region, and which dimensions of empowerment responded most strongly to the group-based approach.

Theoretical framework

The research drew on Kabeer's empowerment framework, which defines empowerment as the expansion of people's ability to make strategic life choices along three dimensions: resources, agency, and achievements ^[9]. Resources include both material assets and social capital; agency refers to the process of decision-making; achievements are the observable outcomes. The SHG-extension linkage model was theorized to operate through all three dimensions: the group provides material resources (savings, inputs) and social capital (networks, solidarity), extension content builds technical agency, and collective action generates achievements (market access, income gains, leadership roles). The Women's Agricultural Empowerment Index was designed to capture indicators across all three Kabeer dimensions, with eight sub-domains reflecting the specific agricultural context of northern Uganda.

Material and methods

Material

Data were collected from 348 women farmers participating in 42 self-help groups across six districts in the Acholi sub-region (Gulu, Amuru, Nwoya, Omoro, Pader, and Kitgum) between April 2021 and September 2023. Ethical clearance was granted by the Gulu University Research Ethics Committee (Approval GUREC-2021/014, dated 8 March 2021). SHGs were identified through the district community development offices and NGO registers; groups were eligible if they had been active for at least three months and had a minimum of 10 women members. Individual participants were randomly selected within each group. Written informed consent was obtained in Acholi, with oral explanation provided by trained female enumerators from the local community.

Methods

A cross-sectional survey with retrospective baseline recall was administered to all 348 participants. The Women's Agricultural Empowerment Index comprised 32 items across eight dimensions, each scored on a composite 0-100 scale. SHG participation duration was categorized into four bands: less than 6 months ($n = 78$), 6-12 months ($n = 94$), 1-2 years ($n = 102$), and over 2 years ($n = 74$). Extension contact intensity was classified as low (0-2 advisory

contacts per quarter) or high (3 or more contacts per quarter) based on group records and extension agent visit logs. Two-way ANOVA tested main effects and interaction effects of duration and extension contact on empowerment scores. Post-hoc Tukey tests identified significant pairwise differences. Qualitative data from 16 focus group discussions (4 per duration category) enriched interpretation. All analyses used SPSS version 27.0 with significance at $\alpha = 0.05$ [10].

Instrument development

The WAEI was constructed in three phases. First, 45 candidate items were drawn from existing women's empowerment scales including the Women's Empowerment in Agriculture Index and the Gender Parity Index [11, 12], supplemented by 12 items generated through consultations with 20 women SHG leaders in the Acholi sub-region. Second, expert validation by six agricultural extension and gender specialists at Ugandan universities reduced the pool to 36 items. Third, pilot testing with 35 women in a non-sampled district yielded Cronbach's alpha values of 0.76-0.89 across eight sub-dimensions; four items were dropped for low item-total correlations, producing the final 32-item instrument. All items were translated into Acholi and back-translated into English for verification.

Results

Table 1: Participant characteristics by SHG duration category ($n = 348$)

Characteristic	<6 mo ($n=78$)	6-12 mo ($n=94$)	1-2 yr ($n=102$)	>2 yr ($n=74$)	p-value
Mean age (years)	34.2 ± 8.7	36.8 ± 9.1	38.4 ± 8.3	41.6 ± 7.9	<0.01
Household head (%)	38.5	42.6	44.1	47.3	0.614
Farm size (acres)	1.82 ± 1.14	2.04 ± 1.23	2.31 ± 1.18	2.47 ± 1.36	0.007
Primary education (%)	62.8	57.4	54.9	51.4	0.421
High ext. contact (%)	32.1	44.7	57.8	68.9	<0.001

Longer-duration members were older and farmed slightly larger plots (Table 1). The proportion receiving high extension contact rose from 32.1% among the newest members to 68.9% among those with over two years,

reflecting both greater group-extension linkage maturity and self-selection of more engaged members into sustained participation.

Table 2: Mean empowerment scores by duration and extension contact level (Composite WAEI)

Extension contact	<6 months	6-12 months	1-2 years	>2 years
Low contact	23.8 ± 7.4	36.3 ± 9.1	49.4 ± 8.6	58.1 ± 7.8
High contact	30.6 ± 8.2	47.1 ± 10.3	62.8 ± 9.4	74.1 ± 8.1
Extension boost (Δ)	+6.8	+10.8	+13.4	+16.0

High extension contact amplified empowerment at every duration level, and the extension boost grew progressively: from +6.8 points among newest members to +16.0 points among those with over two years (Table 2). This widening

gap suggests that extension services become more effective as groups mature and develop stronger absorptive capacity for technical advice.

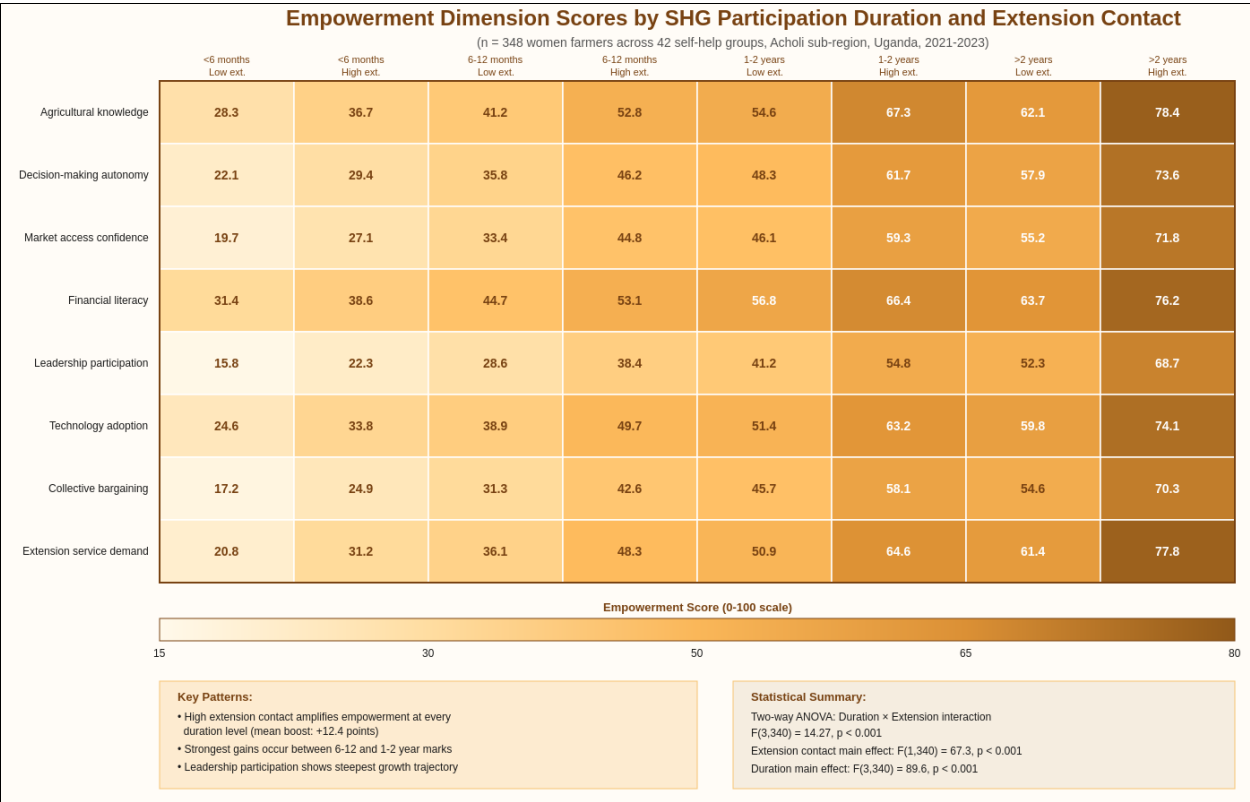


Fig 1: Heatmap showing empowerment dimension scores by SHG participation duration and extension contact intensity (n = 348)

The heatmap (Figure 1) reveals that leadership participation and collective bargaining dimensions showed the steepest growth trajectories across duration bands, particularly when paired with high extension contact. Financial literacy started

from the highest baseline but showed comparatively flatter growth, suggesting that savings activities within SHGs provide a floor effect independent of extension input.

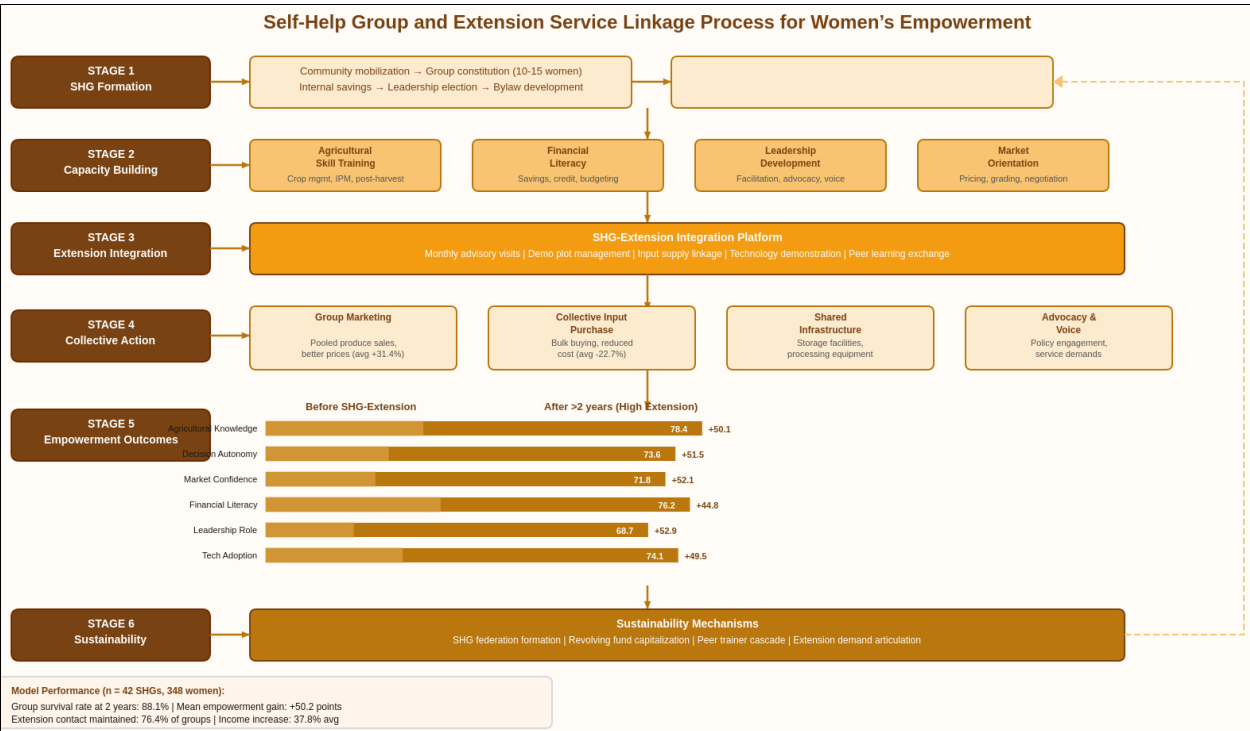


Fig 2: Six-stage process model of self-help group and extension service linkage for women's agricultural empowerment in the Acholi sub-region

Figure 2 traces the process from SHG formation through capacity building, extension integration, collective action,

empowerment outcomes, and sustainability mechanisms. The feedback loop from sustainability back to formation

reflects how established groups generate demand for new SHGs in neighboring communities.

Discussion

The finding that extension contact boosts empowerment more strongly in mature groups than in new ones aligns with the absorptive capacity hypothesis. Groups with longer histories have developed internal norms, trust, and operational routines that make them better positioned to translate technical advice into practice^[13]. In focus groups, women in established SHGs described how they divided extension recommendations among members for testing, then compared results at monthly meetings—a form of farmer-to-farmer experimentation that individual advisory visits don't facilitate.

The outsized gains in leadership participation (+52.9 points) and market confidence (+52.1 points) stand out because these are dimensions where the collective mechanism appears to matter most. Leadership skills can't be practiced in isolation; the SHG provides a governance structure where women rotate through roles as chairperson, treasurer, and secretary^[14]. Similarly, market confidence builds through collective negotiation experiences that no individual extension visit replicates. These patterns echo findings from India's National Rural Livelihoods Mission, where SHG-linked extension produced the largest gains in agency-related rather than knowledge-related dimensions^[6].

The 88.1% group survival rate at two years compares favorably with the 65-75% range reported for donor-initiated women's groups across East Africa^[15]. The integration of extension services may itself contribute to group persistence by providing ongoing external value that sustains member interest beyond the initial savings and social motivation.

Practical applications

For extension managers in northern Uganda and comparable post-conflict settings, these findings suggest that channeling advisory services through existing SHG platforms is more effective than parallel women-targeted extension programs. The progressive extension boost across duration bands implies that agencies should invest in long-term partnerships with groups rather than one-off training events. Prioritizing leadership and market access content over purely technical agronomic advice may generate greater empowerment returns given the collective setting. Finally, supporting SHG federation structures at sub-county level could amplify bargaining power and create sustainable demand pathways for continued extension services^[16].

Conclusion

This research provides evidence that self-help group platforms linked with agricultural extension services produce substantial and progressive empowerment gains among women farmers in northern Uganda. Empowerment scores rose with both SHG membership duration and extension contact intensity, and the interaction between these factors was significant. The largest gains appeared in leadership participation and market confidence—dimensions activated by the collective mechanism rather than technical knowledge alone. The SHG-extension linkage model offers a practical pathway for reaching women farmers who are underserved by conventional extension approaches,

particularly in post-conflict regions where social capital rebuilding and livelihood recovery must proceed simultaneously.

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