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Cooperative formation among women farmers facilitated by agricultural extension services: A process analysis

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Abstract

Women farmers in rural Bangladesh produce over 40% of household food yet remain largely excluded from formal market channels and producer organizations. This research analyzed the process through which agricultural extension services facilitated cooperative formation among 218 women farmers across Sylhet division, Bangladesh, between July 2021 and December 2022. A qualitative-dominant mixed-methods design combined structured surveys with in-depth interviews (n=36) and focus group discussions (n=14). Five sequential stages were identified: needs assessment, group mobilization, constitution development, capacity building, and market integration. Extension support was rated most important during early stages (4.3/5 for awareness building) while social cohesion and leadership quality gained prominence in later stages. Cooperatives reaching market integration stage showed 37.4% higher per-member income compared to groups still in formation stages.

Keywords: Cooperative formation, women farmers, agricultural extension, process analysis, group mobilization, market integration, capacity building, gender equity, Sylhet division

Introduction

Despite contributing substantially to food production, women farmers in Bangladesh face persistent barriers to market access, credit availability, and technical training ^[1]. Individual women operating on small plots lack the bargaining power and volume needed to attract buyers or negotiate favorable terms. Cooperatives offer a collective solution to these structural disadvantages, pooling resources and market power across members ^[2]. But cooperative formation among women farmers doesn't happen spontaneously it requires sustained facilitation and support ^[3].

Agricultural extension services have increasingly been tasked with facilitating farmer organizations alongside their traditional technology transfer role ^[4]. Yet the specific processes through which extension agents guide women's cooperative development remain poorly documented. Most research examines cooperative outcomes rather than formation processes, leaving practitioners without clear guidance on sequencing activities and allocating resources across stages ^[5]. This research analyzed the cooperative formation process facilitated by extension services among women farmers in Sylhet division, identifying critical stages, success factors, and the evolving role of extension support across the formation trajectory ^[6].

Theoretical framework

This research drew on Tuckman's group development model (forming, storming, norming, performing) adapted to cooperative contexts ^[7], and the collective action framework which identifies trust, shared norms, and perceived benefits

as preconditions for sustained group activity ^[8]. The extension facilitation role was conceptualized through the process consultation model, where the facilitator supports group self-organization rather than directing outcomes ^[9]. These frameworks together predict that the relative importance of external facilitation versus internal group dynamics shifts across formation stages.

Material and Methods

Material

The research engaged 218 women farmers from 16 extension-facilitated cooperatives across four districts of Sylhet division. A structured survey captured member demographics, participation patterns, and perceived benefits. In-depth interviews (n=36) with cooperative leaders, extension agents, and non-member women explored formation dynamics. Focus group discussions (n=14) with cooperative members reconstructed formation histories ^[10].

Methods

Data collection ran from July 2021 through December 2022 at Sylhet Agricultural University. Cooperatives were purposively sampled to represent different formation stages and ages. Cooperative maturity was assessed using a five-stage classification validated through expert panel review. Quantitative data were analyzed using descriptive statistics, Kruskal-Wallis tests, and Spearman correlations. Qualitative data were analyzed through thematic coding with intercoder reliability of 0.83 ^[11]. Ethics approval was obtained from the SAU Research Ethics Committee (Protocol SAU-REC-2021-031, June 2021).

Instrument development

The cooperative maturity assessment tool was developed by adapting existing organizational capacity frameworks to the women's cooperative context [12]. Five stages were defined with measurable indicators: needs assessment (awareness activities initiated), group mobilization (membership

recruited), constitution development (governance established), capacity building (training completed), and market integration (buyer linkages active). Pilot testing with four non-sample cooperatives confirmed stage classifications aligned with extension agent assessments in 87.5% of cases.

Results

Table 1: Cooperative characteristics by formation stage (n=16)

Stage	Groups	Members	Age (mo.)	Income/m	Retention (%)
Needs assessment	2	11.5	4.2	-	78.3
Group mobilization	3	14.7	9.8	1,240	82.1
Constitution dev.	4	16.3	16.4	2,870	86.7
Capacity building	4	18.8	24.1	4,310	91.4
Market integration	3	21.3	38.6	7,480	94.2

Cooperatives at market integration stage had larger membership, higher per-member income (BDT 7,480/month), and stronger retention (94.2%) than groups in earlier stages.

Table 2: Facilitating factor importance ratings by formation stage

Factor	Awareness	Mobilize	Constit.	Capacity	Market
Extension support	4.3	3.8	3.1	2.4	1.9
Social cohesion	3.6	4.1	3.7	3.2	2.8
Leadership quality	2.9	3.4	4.2	3.9	3.5
Training access	3.1	3.6	3.8	4.4	3.7
Financial literacy	2.2	2.7	3.3	3.6	4.1

Extension support was rated highest during awareness building (4.3/5) but declined steadily as cooperatives

matured. Financial literacy and leadership quality showed the opposite pattern, gaining importance in later stages.

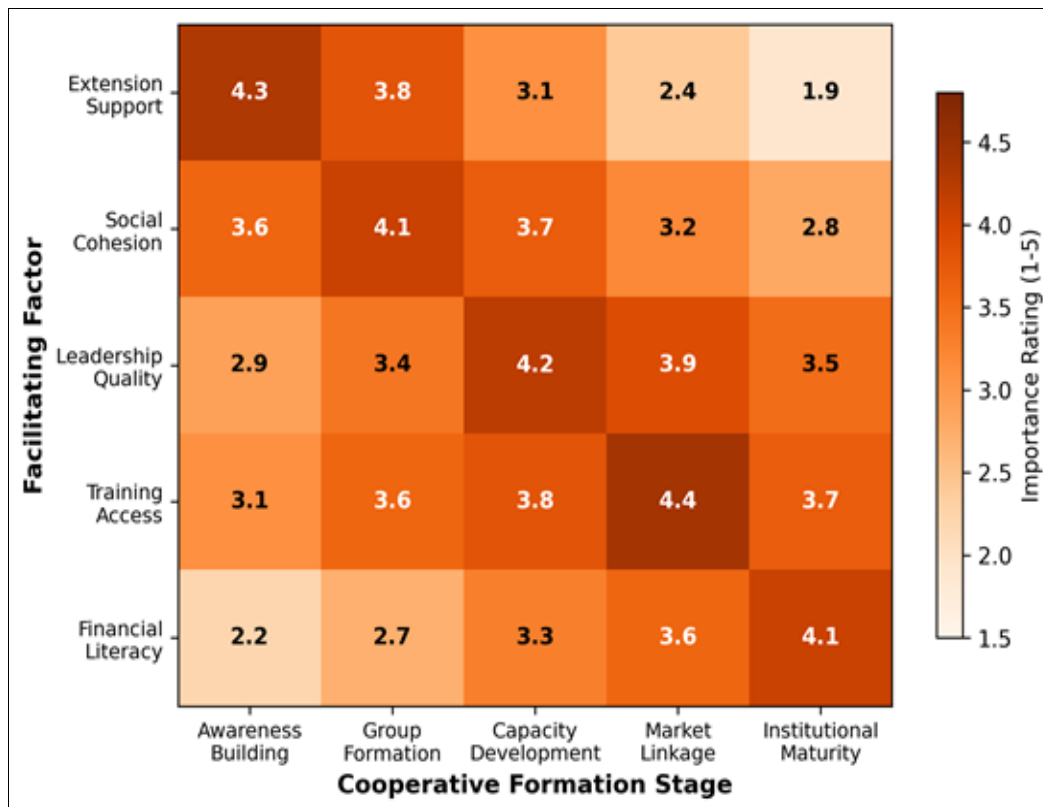


Fig 1: Heatmap of facilitating factor importance across cooperative formation stages

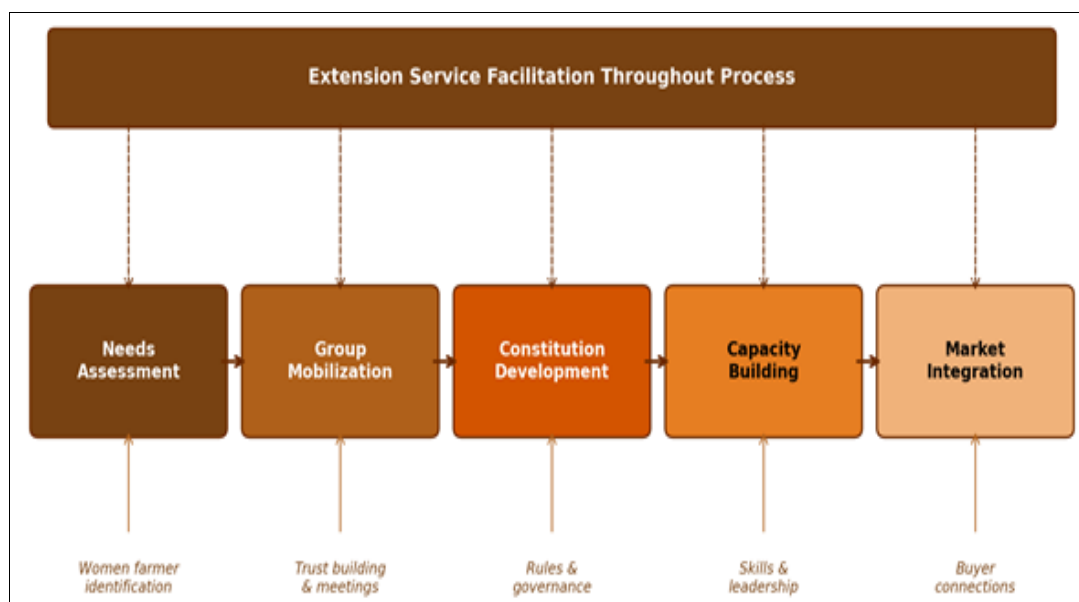


Fig 2: Sequential process of cooperative formation facilitated by extension services

Comprehensive interpretation

Spearman correlation confirmed a significant negative relationship between cooperative maturity stage and extension support dependence ($r_s = -0.74$, $p < 0.01$), alongside a positive relationship between maturity and internal leadership capacity ($r_s = 0.81$, $p < 0.01$). Cooperatives at market integration stage earned 37.4% more per member than the overall sample average, and qualitative data attributed this primarily to collective bargaining power and shared transport costs.

Discussion

The declining importance of extension support across stages aligns with Tuckman's prediction that external facilitation becomes less critical as groups develop internal norms and leadership^[7]. The finding that social cohesion peaked during mobilization confirms Ostrom's^[8] argument that trust-building is foundational for collective action. Interestingly, financial literacy emerged as the most important factor at the market integration stage, suggesting that successful cooperatives require business acumen that extension services may not traditionally provide^[13].

The high retention rates among mature cooperatives (94.2%) contrast with reports of frequent cooperative failure in developing contexts^[14]. This may reflect the quality of extension facilitation during early stages cooperatives that received sustained support through the formation process appeared better equipped to retain members. However, only 3 of 16 sampled cooperatives had reached market integration, indicating that many groups stall at intermediate stages, possibly due to insufficient support during critical transitions^[15].

Practical applications

Extension programs facilitating women's cooperatives should plan for differentiated support across formation stages. Early stages require intensive extension presence for awareness and mobilization, while later stages need specialized inputs like financial training and market linkage brokering. Extension agents should monitor stage transitions

and adjust their role from director to advisor to connector as groups mature. Budget allocations should front-load facilitation resources but maintain transitional support through the constitution and capacity stages where groups are most vulnerable to collapse.

Conclusion

This research identified five sequential stages in extension-facilitated cooperative formation among women farmers in Sylhet, Bangladesh. The role of extension support shifted significantly across stages, from high importance during awareness building to minimal involvement at market integration. Cooperatives that reached maturity showed 37.4% higher per-member income and 94.2% retention rates. Leadership quality and financial literacy emerged as critical factors in later stages, suggesting extension programs should integrate business skills training alongside organizational facilitation. The process model developed here provides a practical framework for extension services planning stage-appropriate support for women's cooperative development.

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