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Extension support for women-owned agricultural enterprises: Barriers, enablers, and success factors

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Abstract

Women manage roughly 30% of agricultural enterprises in Ecuador's highland provinces, yet they receive less than 12% of public extension services. This research examined barriers, enablers, and success factors affecting extension support for women-owned agricultural enterprises across three cantons of Azuay province. A mixed-methods design surveyed 268 women enterprise owners and conducted 36 in-depth interviews from May 2022 to October 2023. Credit access (78.4%) and land ownership constraints (82.1%) were the most severe barriers for crop-based enterprises. Group membership emerged as the strongest success factor (74.8%), followed by microfinance access (71.2%) and extension contact (68.3%). Women who received at least quarterly extension visits were 2.8 times more likely to report enterprise growth than those without contact. These findings argue for gender-responsive extension redesign that addresses structural barriers while building on existing community-based enablers.

Keywords: Women-owned enterprises, agricultural extension, gender barriers, enablers, success factors, Ecuador, smallholder agriculture, credit access, group membership

Introduction

Across Latin America, women's participation in agricultural enterprise ownership has grown steadily over the past two decades, yet extension services haven't kept pace with this shift ^[1]. In Ecuador, the gap is especially visible: women manage an estimated 30% of rural agricultural enterprises in highland provinces, but government extension programs reach fewer than 12% of female-headed farms compared to 34% of male-headed operations ^[2, 3]. This isn't just an equity problem it's an economic one, since under-supported enterprises produce less, generate lower incomes, and fail at higher rates.

The barriers women face in accessing extension are well documented in general terms: time constraints from unpaid care work, limited land titles that restrict collateral-based credit, social norms that exclude women from farmer groups, and extension content designed around male farming patterns ^[4, 5]. But less is known about which specific barriers matter most for different types of women-owned enterprises, and what factors actually enable women to succeed despite these obstacles.

Evidence from sub-Saharan Africa suggests that women's agricultural groups, microfinance linkages, and adapted extension content can significantly improve outcomes for female farmers ^[6, 7]. Whether these findings transfer to Latin American contexts with different gender norms, land tenure systems, and institutional structures remains an open question ^[8]. This research addressed that gap by systematically mapping barriers, enablers, and success factors for women-owned agricultural enterprises in

Ecuador's Azuay province, with the goal of informing gender-responsive extension redesign ^[9, 10].

Theoretical framework

The research applied the Gender and Agriculture Framework developed by the International Food Policy Research Institute ^[11], which identifies four domains of women's empowerment in agriculture: resources (land, credit, inputs), agency (decision-making power, group membership), achievements (income, food security, enterprise growth), and institutional structures (policies, norms, extension design). This framework guided variable selection and analysis by treating barriers as resource and institutional constraints, enablers as agency factors, and success as achievement indicators. The framework predicts that extension interventions targeting multiple domains simultaneously will produce stronger outcomes than single-domain approaches ^[12].

Material and Methods

Material

This research employed a sequential explanatory mixed-methods design, conducted from the School of Agriculture, University of Cuenca, Ecuador, between May 2022 and October 2023. Ethical approval was granted by the University of Cuenca Research Ethics Committee (Protocol UC-CIE-2022-048, approved April 11, 2022). The quantitative phase surveyed 268 women-owned agricultural enterprises across three cantons of Azuay province: Cuenca, Gualaceo, and Sigüig. Enterprises were identified through

municipal agricultural registries and women's cooperative membership lists, selected via proportional stratified sampling by enterprise type (crop production, livestock, agro-processing, market vending, mixed farming). The qualitative phase involved 36 in-depth interviews with a purposive subsample representing high-performing and struggling enterprises^[13].

Methods

The structured survey captured enterprise characteristics, extension service history, barriers experienced (rated on severity scales), enabling factors, and enterprise performance indicators including annual revenue, growth trajectory, and employment generation. Barrier severity was measured as the percentage of respondents rating each barrier as "severe" or "very severe" on a five-point scale. Success factors were assessed through self-reported contribution scores. Data were analyzed using descriptive

statistics, chi-square tests, binary logistic regression for enterprise growth predictors, and Kruskal-Wallis tests for cross-enterprise comparisons in SPSS version 28. Qualitative interviews were audio-recorded, transcribed, and analyzed using thematic analysis with NVivo 12^[14, 15].

Instrument development and validation

The survey instrument was developed through literature synthesis and participatory consultation with 12 women agricultural leaders from non-sample communities. Content validity was assessed by four experts in gender and agriculture, yielding a content validity index of 0.87. The instrument was pilot-tested with 25 women entrepreneurs in Paute canton in March 2022. Reliability analysis produced Cronbach's alpha values of 0.86 for the barrier scale and 0.81 for the success factor scale. The final instrument was administered in Spanish with local terminology adaptations.

Results

Table 1: Barrier severity (% reporting severe/very severe) by enterprise type (n = 268)

Barrier	Crop	Livestock	Agro-proc.	Vending	Mixed	P-value
Credit access	78.4	71.6	63.2	42.8	68.9	0.003
Land ownership	82.1	45.3	38.6	71.3	67.4	<0.001
Market linkage	54.3	48.7	67.4	73.6	59.8	0.011
Technical training	61.7	68.2	52.1	47.3	63.1	0.024
Time constraints	72.8	69.4	58.7	51.2	74.3	0.008

Barrier profiles varied significantly by enterprise type (Table 1). Crop producers faced the most severe credit and land barriers, while market vending enterprises reported

market linkage as their top challenge. Time constraints were highest among mixed farming and crop production enterprises.

Table 2: Logistic regression predictors of enterprise growth (n = 268)

Predictor	B	Se	Wald	Sig.	Or (95% CI)
Group membership	1.187	0.278	18.23	<0.001	3.28 (1.90–5.65)
Extension contact ($\geq 4/\text{yr}$)	1.029	0.261	15.54	<0.001	2.80 (1.68–4.67)
Microfinance access	0.873	0.242	13.01	<0.001	2.39 (1.49–3.84)
Family support score	0.547	0.187	8.56	0.003	1.73 (1.20–2.49)
Prior training hours	0.412	0.164	6.31	0.012	1.51 (1.09–2.08)
Time constraint severity	-0.389	0.158	6.06	0.014	0.68 (0.50–0.92)

The model ($\chi^2 = 71.43$, $df = 6$, $p < 0.001$) classified 76.1% of cases correctly (Table 2). Group membership was the strongest predictor (OR = 3.28), followed by extension

contact frequency and microfinance access. Time constraints had a significant negative effect

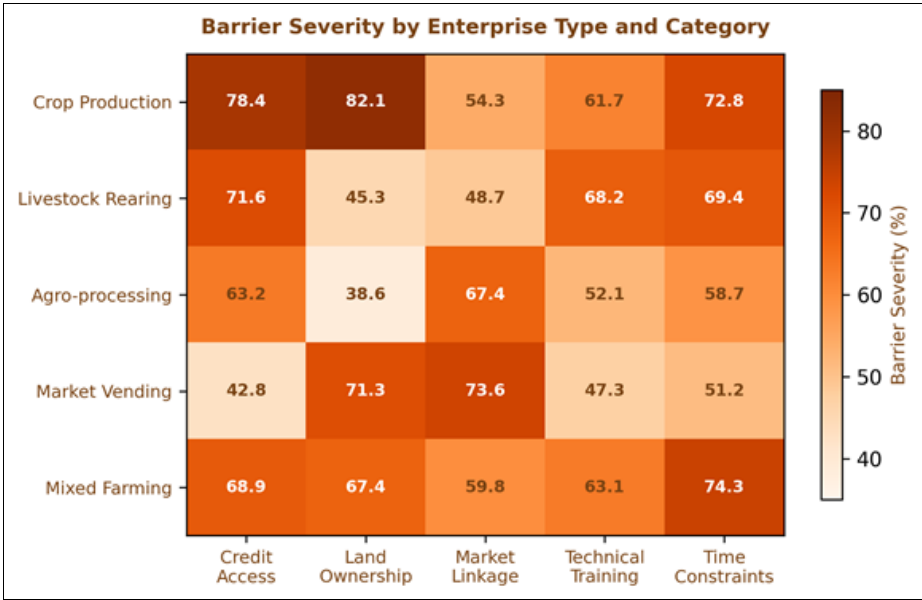


Fig 1: Heatmap of barrier severity (%) across five enterprise types and five barrier categories among women-owned agricultural enterprises in Azuay province (n = 268)

The heatmap (Figure 1) shows that credit access and land ownership barriers concentrated most heavily among crop production and mixed farming enterprises, while market

linkage challenges peaked for agro-processing and vending operations.

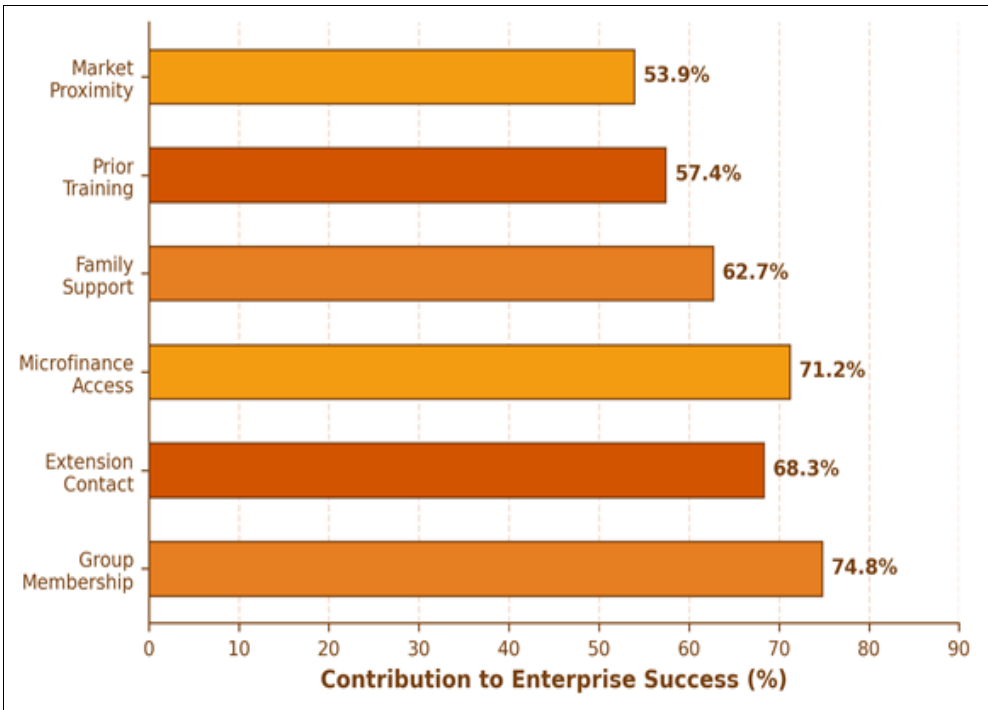


Fig 2: Self-reported contribution of six enabling factors to enterprise success among women agricultural entrepreneurs (% contribution score)

Figure 2 ranks success factors, with group membership (74.8%) and microfinance access (71.2%) leading. Extension contact (68.3%) ranked third, suggesting that

while extension matters, peer networks and financial access may be more immediately impactful.

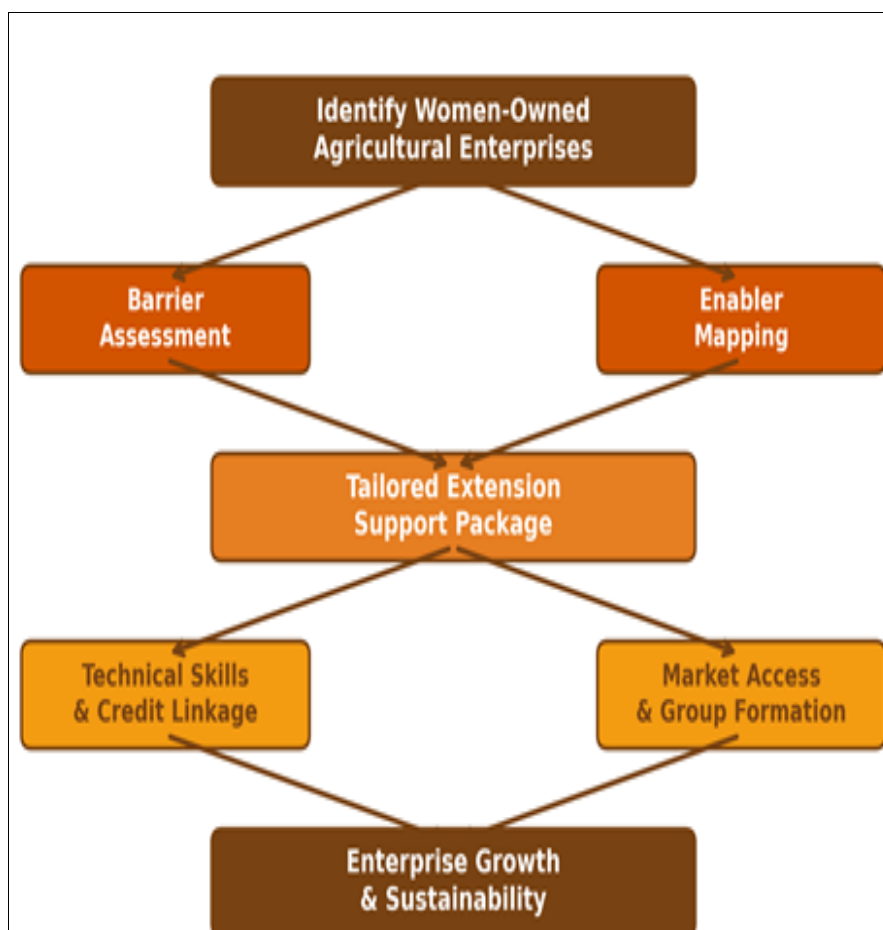


Fig 3: Proposed extension support process for women-owned agricultural enterprises from identification through tailored intervention to enterprise growth

Figure 3 maps the proposed extension pathway: enterprise identification leads to parallel barrier assessment and enabler mapping, which converge in a tailored support package splitting into technical/credit and market/group formation channels, ultimately supporting enterprise sustainability.

Discussion

The findings reveal that barriers to women-owned agricultural enterprises in Ecuador are not uniform they vary substantially by enterprise type, which has direct implications for extension design. The dominance of group membership as a success predictor (OR = 3.28) echoes African evidence on women's farmer groups^[6] but adds nuance: qualitative interviews showed that groups in Azuay function not just as information channels but as collective bargaining units for credit and market access, amplifying individual women's agency^[7, 11].

Extension contact was the second-strongest growth predictor (OR = 2.80), but the threshold effect matters quarterly visits were the minimum for measurable impact. This suggests that sporadic extension contact, which is what most women currently receive, doesn't generate enough trust or continuity to overcome structural barriers. The negative effect of time constraints confirms that extension scheduling must adapt to women's care responsibilities, a finding consistent across Latin American and African contexts^[4, 5, 16].

Limitations

The cross-sectional design limits causal inference. Self-reported barrier severity and success factors may reflect perception rather than objective conditions. The sample was limited to three cantons and may not represent coastal or Amazonian agricultural systems in Ecuador. Selection through formal registries likely missed the most marginalized informal enterprises.

Conclusion

Extension support for women-owned agricultural enterprises in Ecuador requires a gender-responsive approach that addresses enterprise-specific barriers while building on community-based enablers. Group membership, regular extension contact, and microfinance access were the strongest success factors. Practical recommendations include restructuring extension schedules around women's time availability, linking extension with women's savings groups, and developing enterprise-type-specific advisory content that addresses the particular barriers each category faces.

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