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Intra-household dynamics and their influence on gendered access to agricultural extension resources

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Abstract

In a farming household near Thiess, a woman missed three consecutive extension trainings not because she lacked interest but because her husband assigned her market duties on those days. This research examined how intra-household dynamics shaped gendered access to extension resources among 326 households in Dakar region, Senegal, between September 2021 and February 2023. A mixed-methods design combined surveys with paired interviews of 68 husband-wife dyads and 16 focus groups. Women in joint-decision households scored 4.1/5 on extension access compared to 2.8/5 in male-authority households. Decision-making authority, labor allocation, asset control, and mobility restrictions emerged as four mediating pathways, explaining 38.7% of access variance.

Keywords: Intra-household dynamics, gendered access, agricultural extension, decision-making authority, labor allocation, mobility restrictions, household bargaining, women farmers, paired interviews, Senegal

Introduction

Consider two women farmers on the same road in rural Senegal. One attends extension training and accesses inputs regularly; the other participates in none. The difference isn't distance or interest it is the decision-making structure within their households ^[1]. Intra-household dynamics act as invisible gatekeepers to extension access ^[2]. Most extension research treats the household as a unified unit, assuming information reaching any member benefits all ^[3]. But bargaining models show members have unequal power and competing claims on time ^[4].

When extension schedules training during women's domestic duty hours, or registration requires male signatures, household power relations translate into access barriers ^[5]. This research examined how decision-making authority, labor allocation, asset control, and mobility restrictions influenced women's extension access in Dakar region, Senegal ^[6].

Theoretical framework

The research drew on the cooperative conflict model of household bargaining, where resource allocation reflects relative bargaining positions rather than unified preferences ^[4]. Women's fallback positions determine negotiating power within the household ^[7]. The gender and institutions framework added formal and informal rules governing extension access, from registration procedures to mobility norms ^[8]. These frameworks predict women's extension access depends on household-level power relations mediating between supply and uptake.

Material and Methods

Material

The research sampled 326 farming households from four communes in Dakar region through stratified sampling by headship type. A structured survey captured decision-making patterns, extension contact, and access scores. Paired interviews with 68 husband-wife dyads and 16 sex-segregated focus groups explored access barriers ^[9].

Methods

Data collection ran from September 2021 through February 2023 at Cheikh Anta Diop University, Dakar. Extension access was measured on a 5-point composite scale covering six resource categories ^[10]. Household type was classified as male-authority, female-headed, or joint-decision using a validated 12-item scale. Hierarchical regression tested household dynamics' contribution to access variance ^[11]. Ethics approval was obtained (Protocol UCAD-CER-2021-054, August 2021).

Instrument development

The household classification scale was adapted from the WEAI decision-making module ^[12]. Twelve items assessed who makes final decisions on crop choice, input purchase, income use, and extension participation. Pilot testing with 28 dyads produced Cronbach's alpha of 0.83 and 91.4% spousal agreement on classification.

Results

Table 1: Women's extension access scores by household decision-making type

Resource	Overall	Male-auth (n=142)	Female-hd (n=88)	Joint (n=96)	F-stat	p
Training access	3.2	2.8	3.7	4.1	18.4	<.01
Input supply	2.9	2.3	3.4	3.8	22.1	<.01
Credit services	2.7	1.9	3.1	3.6	27.8	<.01
Market info	2.9	2.1	3.3	3.9	24.6	<.01
Technology demo	3.1	2.5	3.6	4.0	19.2	<.01
Advisory visits	2.8	2.0	3.2	3.7	25.3	<.01

Joint-decision households showed the highest women's access scores across all six resource categories. Credit

services showed the widest gap between male-authority (1.9) and joint-decision (3.6) households.

Table 2: Hierarchical regression predicting women's overall extension access

Predictor	β M1	β M2	SE	ΔR^2	F chg	p
Age	-0.08	-0.06	0.04			.21
Education (yrs)	0.19	0.12	0.05			.02
Farm size	0.14	0.09	0.06			.14
Model 1 (controls)				.087	10.2	<.01
Decision authority		0.34	0.06			<.01
Labor allocation		0.22	0.07			<.01
Asset control		0.16	0.06			.01
Mobility freedom		0.13	0.07			.04
Model 2 (+dynamics)				.387	48.6	<.01

Adding household dynamics variables increased explained variance from 8.7% to 38.7%. Decision-making authority

was the strongest predictor ($\beta=0.34$), followed by labor allocation ($\beta=0.22$).

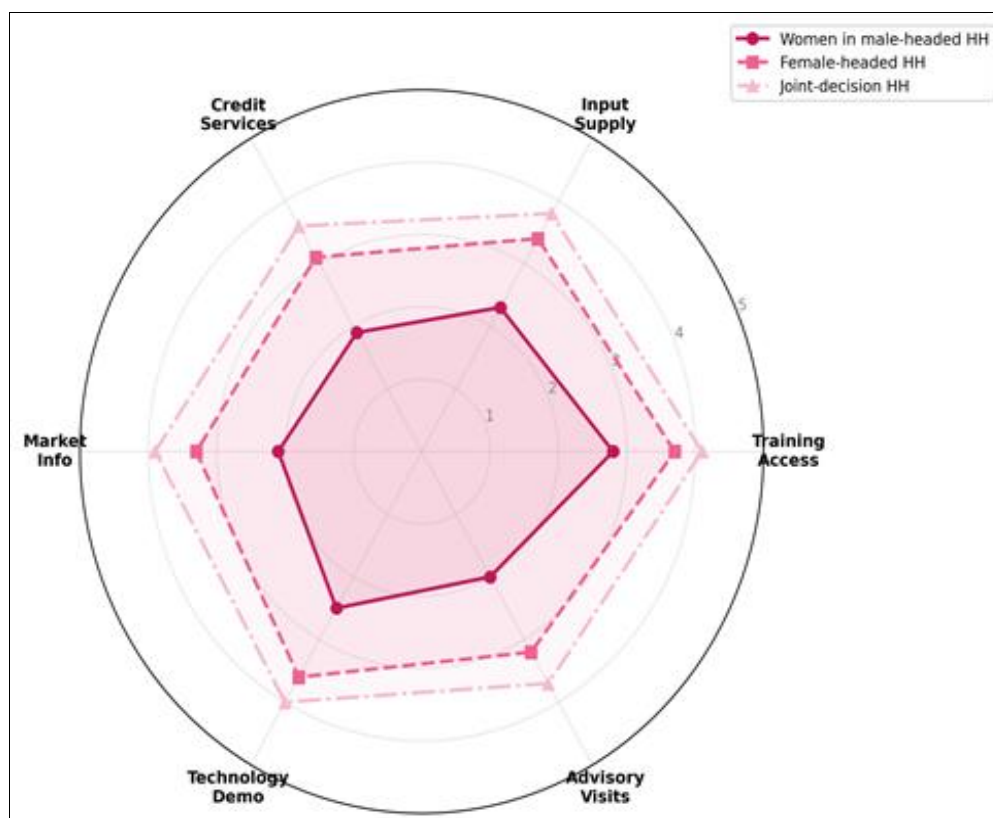


Fig 1: Women's access to extension resources across six categories by household decision-making type

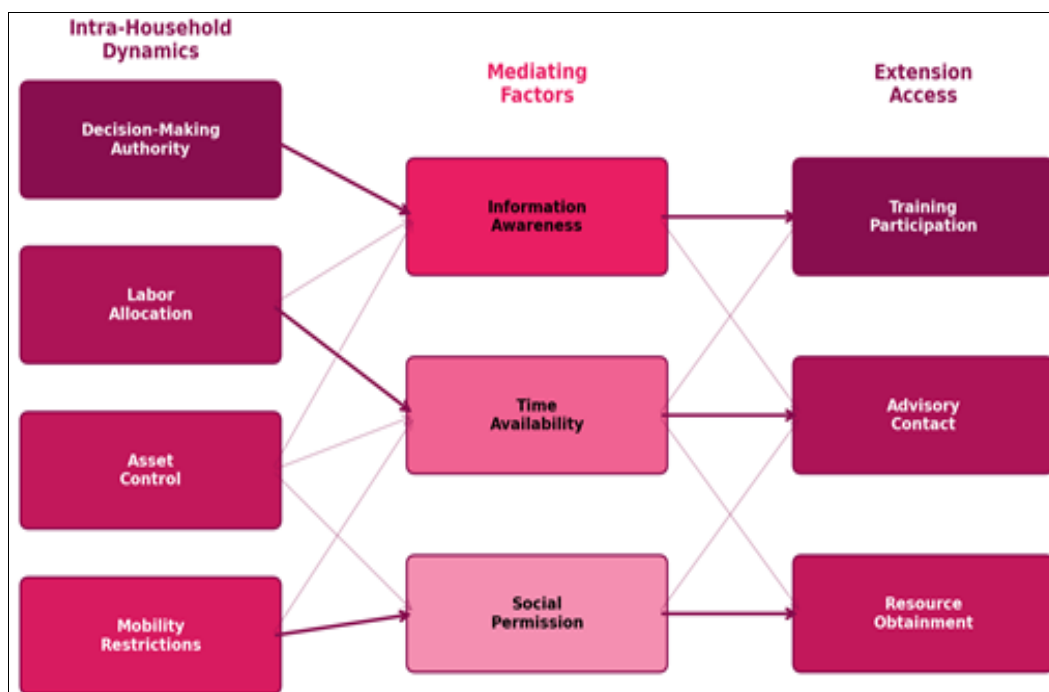


Fig 2: Mechanism diagram showing intra-household dynamics pathways to gendered extension access

Comprehensive interpretation

Paired interview data revealed 67.3% of husbands in male-authority households were unaware their wives wanted to attend extension activities. Meanwhile, 84.2% of wives in those households reported deliberate trade-offs between domestic obligations and extension participation. Time competition and permission norms emerged as the most tangible daily access barriers.

Discussion

Decision-making authority as the strongest predictor supports Sen's ^[4] cooperative conflict model and confirms that household power matters more than individual characteristics for gendered access. The 38.7% explained variance from household dynamics versus 8.7% from conventional targeting factors suggests programs ignoring household barriers will underperform in reaching women ^[13].

Credit services showing the widest gap may reflect compounding effects of asset control and decision authority women need both collateral and permission ^[14]. That 67.3% of husbands were unaware of wives' extension interest suggests passive exclusion rather than active prevention ^[15]. Extension could address this through couple-targeted programming and scheduling adjustments ^[16].

Limitations

Self-reported classification may not capture informal influence beyond formal authority. The cross-sectional design prevents causal claims, and the peri-urban Dakar setting may not represent rural contexts where structures and extension density differ ^[17].

Conclusion

Intra-household dynamics explained nearly five times more variance in women's extension access than conventional individual characteristics. Decision-making authority and

labor allocation were the strongest predictors, with women in joint-decision households accessing resources at roughly twice the rate of those in male-authority households. Extension services should consider couple-oriented programming, flexible scheduling, and household-aware targeting that recognizes the domestic bargaining context mediating women's participation ^[18].

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