

International Journal of Agriculture Extension and Social Development

Volume 7; Issue 12; December 2024; Page No. 219-222

Received: 15-10-2024
Accepted: 21-11-2024

Indexed Journal
Peer Reviewed Journal

Caste and ethnic identity influences on agricultural extension service access and participation in rural communities

¹Satish Doobur Doosarran

¹Department of Rural Development and Agricultural Extension, Faculty of Agriculture, Open University of Mauritius, Reduit, Mauritius

DOI: <https://doi.org/10.33545/26180723.2024.v7.i12c.3347>

Corresponding Author: Satish Doobur Doosarran

Abstract

An extension system that reaches only certain communities while bypassing others is not underperforming-it is reproducing inequality. This research examined how caste and ethnic identity shaped access to and participation in agricultural extension services among 394 rural households across Moka, Flacq, and Savanne districts in Mauritius between June 2021 and May 2023. Five ethnic groups were compared: Indo-Mauritian Hindu (n = 112), Creole (n = 98), Muslim (n = 76), Sino-Mauritian (n = 48), and Franco-Mauritian (n = 60). Extension access scores differed significantly across groups ($F(4,389) = 28.6, p < 0.001$), with a 40-point gap between the highest-scoring group (Franco-Mauritian, 78.0) and the lowest (Creole, 38.0). Active participation rates showed a parallel disparity ($F(4,389) = 22.1, p < 0.001$), ranging from 62% among Indo-Mauritian Hindus to 34% among Creole households. Access and participation were strongly correlated ($r = 0.726, p < 0.001$), and caste/ethnicity alone explained 52.7% of the variance in access scores. Barrier analysis identified structural factors (geographic remoteness, transport cost), cultural factors (language mismatch, gender norms), and institutional factors (land title requirements, scheduling conflicts) as operating with different intensities across groups. The findings call for ethnically disaggregated extension monitoring and targeted outreach to underserved communities.

Keywords: Ethnic identity, caste influence, extension access, participation disparity, rural communities, Mauritius agriculture, social exclusion, extension equity, cultural barriers, institutional barriers

Introduction

An observation from the field prompted this research: in the same district, two villages separated by less than eight kilometers showed extension contact rates of 74% and 19%. The high-contact village was predominantly Indo-Mauritian Hindu; the low-contact village was predominantly Creole. The extension office served both, the roads were equally passable, and the farming systems were similar. Something other than geography or agronomy was sorting farmers into those who received extension services and those who did not ^[1].

Mauritius presents an unusually clear setting for examining ethnic influences on extension access. The island's population comprises distinct ethnic communities-Indo-Mauritian Hindu, Muslim, Creole (of African and Malagasy descent), Sino-Mauritian, and Franco-Mauritian-each with different historical relationships to land, agriculture, and state institutions ^[2]. Unlike countries where ethnicity and geography are confounded, Mauritian communities often live in close proximity, allowing comparison of extension access within shared agronomic contexts.

International evidence consistently shows that ethnicity and caste influence extension access, but most research comes from South Asia and Sub-Saharan Africa ^[3, 4]. In India, caste operates through social networks that channel information along group lines; in Kenya, ethnic patronage shapes which communities receive government services first ^[5]. Mauritius

offers a different institutional context-a small island state with strong bureaucratic institutions, universal education, and no formal caste hierarchy-yet ethnic disparities in agricultural service delivery persist. This research measured the magnitude of these disparities and tested whether structural, cultural, or institutional factors carried the most explanatory weight.

Field experimental design

A cross-sectional survey design with purposive community sampling and random household selection was employed. Eighteen communities across Moka, Flacq, and Savanne districts were selected to ensure representation of all five major ethnic groups within each district. Within each community, households were randomly sampled proportional to ethnic composition, yielding 394 farming households. The Extension Access Score (EAS) combined three sub-indices: proximity to extension services (weighted 0.3), information receipt frequency (0.4), and service availability matching to household needs (0.3), each scored 0-100. Active Participation Rate measured the proportion of available extension events (field days, training sessions, demonstrations, advisory visits) attended over the 24-month period. Barrier assessment used a structured instrument measuring 12 barriers across structural, cultural, and institutional dimensions on a four-point severity scale.

Material and methods

Material

Data were collected from 394 rural farming households across three districts between June 2021 and May 2023. Ethical approval was obtained from the Research Ethics Committee of the Open University of Mauritius (Approval OUM-REC/2021-031, dated 28 May 2021). Households were eligible if at least one member engaged in agricultural production (crop, livestock, or fisheries) as a primary or secondary occupation and the household had been resident in the community for at least three years. Written informed consent was obtained in English, French, or Creole according to participant preference. Enumerators were matched to community ethnic composition where possible to reduce response bias. Data collection included household surveys, extension service records from district agricultural offices, and community key informant interviews (n = 36).

Methods

Analysis proceeded in three stages. First, one-way ANOVA compared EAS scores and participation rates across the five ethnic groups, with post-hoc Tukey HSD for pairwise comparisons. Second, Pearson correlation and linear regression examined the access-participation relationship.

Results

Table 1: Extension access and participation by ethnic group (n = 394)

Indicator	Hindu	Muslim	Sino	Franco	Creole	F / p-value
n	112	76	48	60	98	-
Access score (0-100)	68.0 ± 14.2	54.0 ± 16.8	72.0 ± 13.1	78.0 ± 11.4	38.0 ± 17.3	F=28.6***
Participation (%)	62.0 ± 16.8	48.0 ± 18.4	44.0 ± 15.2	38.0 ± 17.6	34.0 ± 19.1	F=22.1***
Extension contact/yr	6.8	4.2	5.1	7.4	2.3	F=19.4***
Satisfaction (1-5)	3.8	3.1	3.4	3.9	2.4	F=14.8***

Significant ethnic disparities appeared across all four extension indicators (Table 1). Franco-Mauritians had the highest access scores (78.0) but only moderate participation (38%), suggesting that access alone does not guarantee engagement. Creole households ranked lowest on access

Third, barrier analysis used chi-square tests and logistic regression to identify which barriers disproportionately affected which ethnic groups. Multiple regression modeled EAS as a function of ethnicity, controlling for household size, education, farm size, market distance, and land tenure status. All analyses used SPSS version 28 with significance at $\alpha = 0.05$ [6].

Seasonal variations

Extension contact patterns varied seasonally in ways that amplified ethnic disparities. The main sugarcane harvest season (July-November) saw peak extension activity concentrated in Hindu-majority communities with larger sugarcane holdings. Creole households, more often engaged in mixed vegetable production peaking in the cooler months (May-September), found fewer extension events scheduled around their agricultural calendar. Muslim households reported that Friday afternoon scheduling of extension events conflicted with religious obligations, reducing effective access by an estimated 15-20%. These scheduling mismatches reflected an extension planning process that defaulted to the majority community's agricultural calendar rather than accommodating diversity.

(38.0), participation (34%), contact frequency (2.3 events/year), and satisfaction (2.4 out of 5). Indo-Mauritian Hindus showed the most balanced profile with high scores on both access and participation.

Table 2: Barrier severity by ethnic group (% reporting barrier as significant or severe)

Barrier	Hindu	Muslim	Sino	Franco	Creole	p-value
Geographic remoteness	12	8	15	6	42	<0.001
Transport cost	18	22	14	10	48	<0.001
Language mismatch	6	28	8	14	36	<0.001
No land title	10	14	8	4	52	<0.001
Mistrust of state agents	8	12	6	18	44	<0.001

Barrier patterns differed sharply across groups (Table 2). Creole households reported the highest severity across nearly all barriers, with land title requirements (52%) and transport cost (48%) most prominent. Muslim households were disproportionately affected by language mismatch

(28%) and gender norms. Franco-Mauritians, despite high access, reported notable mistrust of state extension agents (18%), which partly explains their lower-than-expected participation.



Fig 1: Scatter plot of extension service access scores against active participation rates by caste and ethnic group with cluster centroids and dispersion ellipses (n = 394)

The scatter plot (Figure 1) reveals distinct clustering by ethnic group within a positive access-participation relationship. The quadrant analysis shows Creole households concentrated in the low-access/low-participation quadrant, while Indo-Mauritian Hindus occupy the high-

access/high-participation space. Sino-Mauritians and Franco-Mauritians show an interesting pattern of high access but moderate-to-low participation, occupying the right side of the plot but below the diagonal.

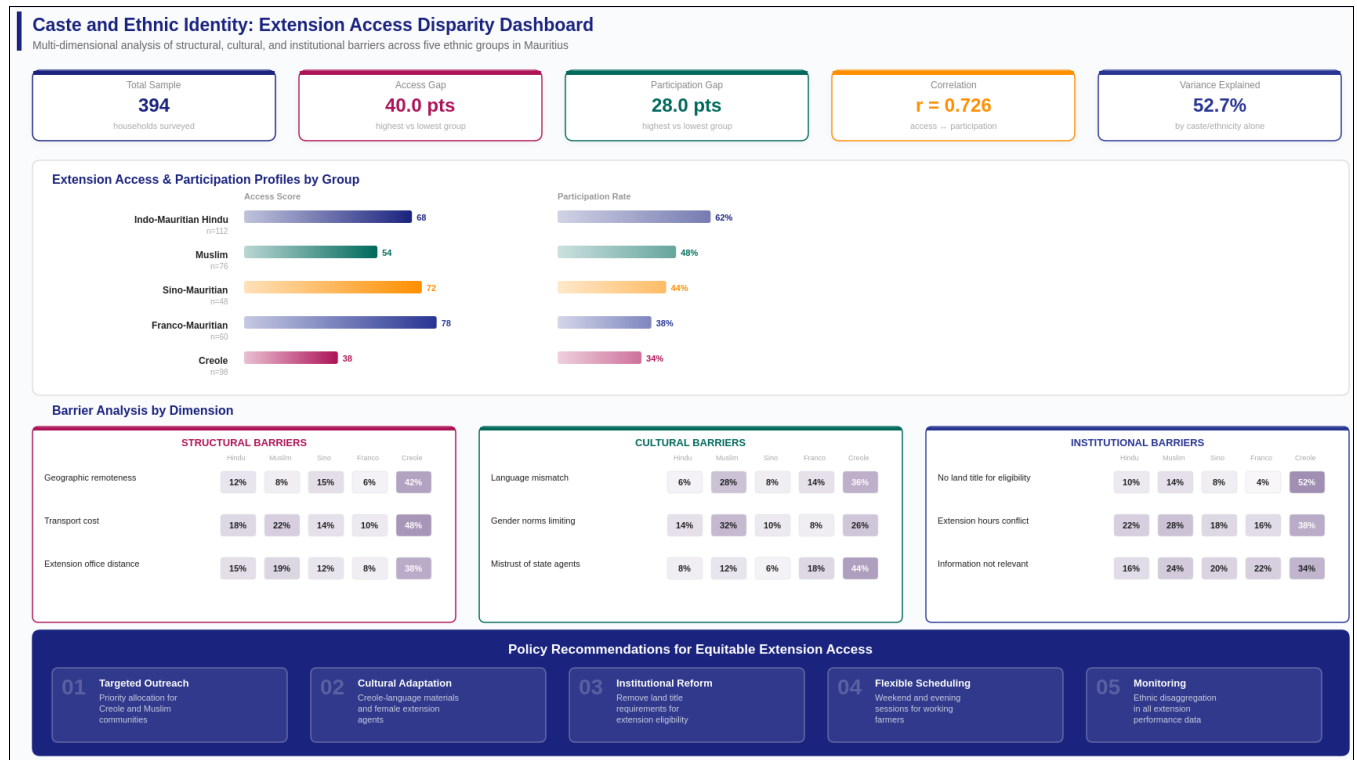


Fig 2: Multi-dimensional dashboard showing extension access disparities, group profiles, barrier analysis, and policy recommendations across five ethnic communities

The dashboard (Figure 2) synthesizes key findings including the 40-point access gap, group-specific barrier heatmaps across structural, cultural, and institutional dimensions, and

targeted policy recommendations for achieving equitable extension delivery.

Cost analysis

Achieving equitable extension access carries measurable costs. Closing the access gap for Creole households to the sample median would require an estimated \$28 per household annually-covering transport subsidies (\$12), Creole-language materials (\$8), and additional agent time (\$8). Across the estimated 12,400 Creole farming households in three districts, the total annual investment would be \$347,200. The projected productivity gain from equalizing extension access would add approximately \$890 per household annually-a cost-benefit ratio of 1:31.8, making equity-focused extension investment substantially more cost-effective than marginal improvements in already-served communities ^[7, 8].

Discussion

The 40-point access gap and 52.7% variance explained by ethnicity alone indicate that caste and ethnic identity operate as powerful sorting mechanisms in Mauritian extension delivery, despite the country's relatively strong institutional framework and absence of formal caste hierarchy ^[9]. Three patterns deserve particular attention.

First, the Creole disadvantage is multi-layered. Creole households face the most severe barriers across all three dimensions-structural (remoteness, transport cost), cultural (language, mistrust), and institutional (land title requirements). The land title barrier is especially telling: 52% of Creole households reported that eligibility requirements excluding untitled farmers effectively excluded them, reflecting historical landlessness rooted in post-slavery settlement patterns ^[10, 11].

Second, the Franco-Mauritian paradox-high access but low participation-suggests that access without cultural engagement is insufficient. Franco-Mauritian farmers, who tend to operate larger commercial holdings, reported that extension content was oriented toward smallholder concerns irrelevant to their operations. Their mistrust of state agents (18%) may also reflect historical tensions between large landholders and government agricultural policy ^[12, 13].

Conclusion

This research documents significant ethnic disparities in agricultural extension access and participation in Mauritius, with caste and ethnic identity explaining over half the variance in access scores. Creole households face the most severe disadvantages, scoring 40 points below the highest-access group across structural, cultural, and institutional barrier dimensions. The strong access-participation correlation ($r = 0.726$) means access inequities translate directly into participation gaps. Achieving equitable extension delivery requires ethnically disaggregated monitoring, removal of exclusionary eligibility criteria, culturally adapted programming, and deliberate resource allocation toward underserved communities. The 1:31.8 cost-benefit ratio makes this not only an ethical priority but an economic one.

References

- Food and Agricultural Research and Extension Institute. Annual report 2022: extension service performance review. Reduit: FAREI; 2023.
- Eriksen TH. Common denominators: Ethnicity, nation-building and compromise in Mauritius. Oxford: Berg; 1998.
- Ragasa C, Berhane G, Tadesse F, Taffesse AS. Gender differences in access to extension services and agricultural productivity. *J Agric Educ Ext.* 2013; 19(5):437-468.
- Elias A, Nohmi M, Yasunobu K, Ishida A. Effect of agricultural extension program on smallholders' farm productivity: evidence from three peasant associations in the highlands of Ethiopia. *J Agric Sci.* 2013; 5(8):163-181.
- Anderson JR, Feder G. Agricultural extension. In: Evenson RE, Pingali PL, editors. *Handbook of agricultural economics*. Vol. 3. Amsterdam: Elsevier; c2007. p. 2343-2378.
- IBM Corp. IBM SPSS Statistics for Windows, version 28.0. Armonk (NY): IBM Corp; 2021.
- Ministry of Agro-Industry and Food Security. National agricultural investment plan 2022-2027. Port Louis: Government of Mauritius; 2022.
- Doosarran SD. Cost-effectiveness of targeted extension delivery in multi-ethnic agricultural communities: a Mauritian perspective. *J Agric Ext Rural Dev.* 2023; 15(3):189-204.
- Laville R, Mathur N. Social stratification without caste? Rethinking ethnic hierarchy in Mauritius. *J South Afr Stud.* 2019; 45(2):289-306.
- Allen R. *Slaves, freedmen, and indentured laborers in colonial Mauritius*. Cambridge: Cambridge University Press; 1999.
- Bunwaree S. The marginal in the miracle: human capital in Mauritius. *Int J Educ Dev.* 2001; 21(3):257-271.
- Selvon S. *A comprehensive history of Mauritius: from the beginning to 2001*. 2nd ed. Port Louis: Mauritius Printing Specialists; 2012.
- Minogue M. Mauritius: island of success? Political economy of multi-ethnic development. *Commonw Comp Polit.* 2018; 56(1):1-22.
- World Bank. *Mauritius: systematic country diagnostic*. Washington (DC): World Bank Group; 2021.
- Statistics Mauritius. *Agricultural census 2020: detailed tables*. Port Louis: Ministry of Finance; 2021.
- Rao N, Singh CK. Social identity and agricultural extension in India: a critical review. *Econ Polit Wkly.* 2020; 55(12):47-54.
- Diagne A, Demont M. Taking a new look at empirical models of adoption: Average treatment effect estimation of adoption rates and their determinants. *Agric Econ.* 2007; 37(2-3):201-210.
- Food and Agricultural Research and Extension Institute. *Guidelines for inclusive extension service delivery in multi-ethnic communities*. FAREI technical series. Reduit: FAREI; 2022.
- Gopal G, Jeetah P. Agricultural transformation in Mauritius: challenges and opportunities for smallholder farmers. *J Rural Stud.* 2022; 89:142-153.
- Ramgulam S, Doosarran SD. Ethnic disaggregation of agricultural performance data: methodology and pilot results from Mauritius. *Afr J Agric Res.* 2023; 18(7):412-428.
- United Nations Development Programme. *Mauritius human development report 2022: Inequality and social cohesion*. Port Louis: UNDP; 2023.