



Empowering the Margins: Assessing the Inclusivity of Agricultural Development Schemes in Mysuru District

Mr. Shankar Prasad S¹, Dr. K Elango²

¹Ph.D Research Scholar, Department of Political Science and Public Administration, Annamalai University, Chidambaram.

²Assistant Professor (On Deputation) & Research Supervisor, Department of Political Science & Public Administration, Annamalai University, Chidambaram.

Abstract

This study evaluates the operational inclusivity of state and central agricultural development schemes across the distinct socio-economic landscapes of Mysuru District, Karnataka. While regional agricultural policies aim to enhance rural livelihoods, smallholders, landless laborers, women, and marginalized castes often face structural bottlenecks that limit their access to these benefits. Utilizing a stratified random sampling methodology, primary data was gathered from 400 rural households across all seven talukas of Mysuru District. The empirical framework applies a robust four-stage statistical testing architecture: the Chi-Square Test of Independence, Independent Samples t-test, One-Way ANOVA, and Multiple Linear Regression. The empirical results reveal substantial disparities in scheme accessibility, driven primarily by landholding size, caste categories, and digital literacy. While high-subsidy programs like *Krishi Bhagya* and the *Sub-Mission on Agricultural Mechanization (SMAM)* show high adoption rates among medium and large landholders, marginal farmers face exclusion due to rigid documentation requirements and complex digital delivery setups. The paper concludes with targeted policy measures designed to move from nominal, compliance-driven distribution to an equitable, needs-based framework for rural welfare.

Keywords: Agricultural Inclusivity, Marginal Farmers, Mysuru District, Policy Delivery, Structural Exclusion.

Introduction

Agricultural development is central to rural poverty alleviation and sustainable economic growth in India. In Karnataka, the agricultural sector supports over half of the rural workforce, making equitable policy design essential for regional stability. Mysuru District is located in the southern transitional and hilly agro-climatic zones, featuring a diverse agricultural profile that spans river-irrigated sugarcane and paddy tracts alongside rainfed, drought-prone semi-arid terrains. To address disparities and climate risks, the Ministry of Agriculture and Farmers Welfare (Government of India) along with the Department of Agriculture (Government of Karnataka) have rolled out several targeted welfare schemes. These include *Pradhan Mantri Kisan Samman Nidhi (PM-KISAN)*, *Krishi Bhagya* (rainwater harvesting and sustainable farming), *Paramparagat Krishi Vikas Yojana (PKVY)* for organic cultivation, and the *Sub-Mission on Agricultural Mechanization (SMAM)*.

Despite these policy efforts, structural challenges continue to affect rural distribution networks. Institutional frameworks often inadvertently favor resource-rich agrarian classes due to asset-backed eligibility criteria and digital entry barriers. Genuine regional development requires an inclusive model where marginal stakeholders receive proportional access to state resources. This study examines the structural mechanics of scheme delivery in Mysuru District to determine if current agricultural policies effectively reach marginalized communities or if they primary reinforce existing rural hierarchies.

Need of the Study

While macro-level evaluations often celebrate high subsidy disbursements and physical asset distribution, they frequently obscure localized, micro-level disparities. Mysuru District features distinct intra-regional economic variations: talukas like T. Narasipura and H.D. Kote present vastly different irrigation access, land patterns, and social demographics.

Evaluating agricultural policy through an inclusivity lens is essential for several reasons:

- **The Shrinking Landholding Reality:** Over 80% of agricultural holdings in Mysuru belong to small and marginal categories, making it critical to examine how well policies adapt to shrinking farm sizes.
- **The Digital Divide:** As scheme delivery transitions to automated portals like FRUITS (Farmer Registration and Unified Beneficiary Information System) and Direct Benefit Transfer (DBT) networks, assessing digital literacy and access gaps among marginalized populations is necessary.

- **Resource Misallocation Risks:** Identifying structural bottlenecks helps prevent elite capture of public resources, ensuring state subsidies effectively support vulnerable rural households.

Research Gap

An extensive review of regional agrarian literature reveals that while numerous studies evaluate individual programs (such as *PM-Fasal Bima Yojana* or *Krishi Bhagya*) on broad performance parameters like crop yield and income changes, few focus specifically on systemic social inclusivity. Most existing policy evaluations treat "farmers" as a homogeneous demographic, often overlooking the distinct challenges faced across intersecting identities like land size, caste, and gender. Additionally, few contemporary studies combine multi-test parametric and non-parametric econometric strategies to analyze agricultural delivery structures within Southern Karnataka. This research addresses these gaps by presenting a dedicated empirical assessment of policy inclusivity across marginalized demographics in Mysuru District.

Objectives of the Study

1. To assess the socio-economic profile of agricultural households across Mysuru District.
2. To examine the awareness, accessibility, and adoption rates of key agricultural development schemes among small, marginal, and marginalized farmers.
3. To empirically analyze whether scheme awareness and benefit distribution vary significantly across landholding size, caste categories, and geographic sub-regions.
4. To model the socio-economic determinants influencing the overall inclusivity index of agricultural welfare schemes in the study region.
5. To offer strategic policy recommendations for improving the delivery and equity of agricultural interventions.

Scope of the Study

The research focuses on the geographic boundaries of Mysuru District, covering all seven talukas: Mysuru, T. Narasipura, Nanjangud, H.D. Kote, Hunsur, Periyapatna, and K.R. Nagar.

The analytical scope evaluates the performance of five prominent agricultural schemes:

1. **PM-KISAN** (Direct Income Support)
2. **Krishi Bhagya** (Dryland Farming Water Conservation)
3. **SMAM** (Sub-Mission on Agricultural Mechanization)
4. **PKVY** (Paramparagat Krishi Vikas Yojana - Organic Farming)
5. **Pradhan Mantri Fasal Bima Yojana (PMFBY)** (Crop Insurance)

The demographic focus centers on vulnerable rural populations, including marginal farmers (<1 hectare), small farmers (1–2 hectares), landless agricultural laborers, and women farmers.

Limitations of the Study

- **Recall Bias:** The primary data rely on respondent recollections regarding historical subsidy timelines, input costs, and training periods, which introduces potential recall bias.
- **Cross-Sectional Constraints:** The study utilizes a cross-sectional dataset collected during a specific timeframe, capturing a snapshot of policy dynamics rather than tracking long-term longitudinal changes.
- **External Validity Boundaries:** The empirical insights reflect the specific socio-economic, administrative, and environmental conditions of Mysuru District, meaning findings may not perfectly translate to regions with significantly different agrarian structures.

Review of Literature

- **Dev (2012)** examined the operational status and structural bottlenecks of Indian smallholder agriculture. The researcher concluded that sustainable, macro-level agricultural growth and effective poverty reduction depend heavily on eliminating institutional credit bottlenecks and improving basic resource access for marginal farmers, who make up over 80% of the country's farming community (Dev, 2012). *Cited by: 427*
- **Patil, Reidsma, & Shah (2014)** applied the comparative *TechnoGIN* economic model across the distinct agro-ecological zones of Mysuru and Chitradurga in Karnataka (Patil et al., 2014). Their simulation proved that while eco-friendly and organic farming practices significantly lower input costs and reduce immediate debt risks, they create localized soil nutrient deficits that require targeted, long-term state policy support to remain viable for smallholders (Patil et al., 2014). *Cited by: 193*
- **Udin (2014)** explored localized rural income dynamics and livelihood patterns across rural Karnataka. The study demonstrated that decentralized, grass-roots, and community-led farming initiatives generate higher operational efficiency and farm-level satisfaction than top-down, rigid bureaucratic policy interventions.
- **Birthal et al. (2015)** evaluated technology distribution systems and the mechanization gap in Indian agriculture. The empirical findings demonstrated that minor and small farmers experience lower adoption rates for advanced,

modern machinery because of prohibitive upfront capital costs and a systemic lack of institutional custom-hiring options at the village level.

- **Amrutha & Kumar (2016)** investigated the operational performance of self-helpgroup (SHG) bank-linkage frameworks in Southern Karnataka. Their findings revealed that while micro-credit access improved for rural women, true operational equity and leadership opportunities within broader regional agricultural production networks remained restricted by traditional patriarchal norms.
- **Ghosh (2017)** evaluated the socio-economic impact of implementing Direct Benefit Transfers (DBT) in Indian agriculture. The analysis highlighted that structural bottlenecks—specifically poor rural banking infrastructure, connectivity errors, and outdated, mismatched land records—led to extensive exclusion errors, particularly among landless agricultural laborers.
- **Agarwal (2018)** examined deep-seated gender dynamics and institutional biases within Indian farming systems. The author argued that state-sponsored agricultural extension programs systematically overlook and exclude women farmers due to deep-rooted biases tied to institutional land ownership and formal titles.
- **Raghunathan, Kannan, & Quisumbing (2019)** analyzed institutional delivery gaps and equity metrics within rural development and nutrition programs. Their research emphasized that uniform national guidelines lack the necessary flexibility to address localized, village-level socio-economic disparities and regional caste realities.
- **Naik & Nagadevara (2020)** evaluated organic value chains and commercial market access in Karnataka. The study identified that minor and marginal farmers faced significantly lower participation rates in certified organic cultivation due to high initial compliance costs, complex bureaucratic certification procedures, and weak local market linkages.
- **Kumar, Takeshima, & Joshi (2021)** examined agricultural mechanization policies with a focus on the *Sub-Mission on Agricultural Mechanization (SMAM)*. The authors noted that decentralized custom hiring models frequently experience elite capture by large, resource-rich landowners unless they are monitored by local administrative checks.
- **Thippeswamy (2021)** investigated state-supported organic farming promotional programs in Karnataka. The researcher identified limited regional marketing infrastructure, poor storage networks, and insufficient financial subsidy rates as the primary constraints hindering resource-poor marginal cultivators from adopting sustainable practices.
- **Varshney et al. (2022)** assessed the implementation efficiency of the direct income transfer program, *PM-KISAN*. Their empirical evaluation indicated that while direct financial transfers provided effective cash flow support during lean, pre-harvest periods, the slow administrative process of updating land titles remained a bottleneck to universal inclusion.
- **Subramanian & Chandrasekhar (2023)** analyzed digital agricultural transformations and automated welfare delivery portals in Southern India. Their study highlighted that automated platforms often exclude older, illiterate, and marginal farmers due to a lack of local technical support, high digital literacy barriers, and biometric errors.
- **Raju & Shreedhar (2024)** studied the adoption of water harvesting and dryland conservation programs across Karnataka, focusing on the *Krishi Bhagya* scheme. Their findings showed that while the scheme delivered significant benefits in rainfed areas, it faced low adoption among marginal farmers due to mandatory co-financing requirements that vulnerable households could not afford.
- **Government of Karnataka (2025)** Economic Survey data highlighted regional variations in scheme utilization through the centralized *FRUITS* database. The official reporting emphasized the need for target-specific, localized outreach strategies in tribal sub-regions—such as the H.D. Kote taluka in Mysuru—to resolve persistent structural exclusion.

Research Methodology

● Sampling Design

This study employs a multi-stage stratified random sampling technique. A sample of 400 respondents was selected across the Mysuru district.

● Data Collection Framework

Primary data was gathered using a pre-tested, structured interview schedule administered directly to respondents. Secondary data was compiled from official sources, including the Department of Agriculture (Mysuru), the FRUITS database portal, NITI Aayog development indices, and the Karnataka State Economic Surveys.

Tools Used for Analysis

The data analysis framework employs four key statistical tests to assess policy inclusivity across various dimensions:

➤ Chi-Square Test of Independence

Used to evaluate qualitative relationships, specifically examining whether the awareness levels of agricultural schemes are independent of the respondent's social category (General, OBC, SC, ST).

➤ Independent Samples t-test

Employed to compare mean values between two independent groups, analyzing whether the average volume of benefits received via Direct Benefit Transfer (DBT) varies significantly between male and female-headed farming households.

➤ **One-Way Analysis of Variance (ANOVA)**

Used to evaluate differences across multiple groups, determining whether the mean Welfare Access Index (WAI) scores differ significantly across the four distinct landholding classifications.

➤ **Multiple Linear Regression Analysis**

Applied to model the relationship between a dependent variable and multiple predictors, identifying the socio-economic factors that significantly influence the overall Welfare Access Index (Y_{WAI}) of rural households.

Analysis and Interpretations

➤ **Chi-Square Analysis: Scheme Awareness vs. Social Category**

This test evaluates the association between scheme awareness and social classification categories across the sample.

Social Category	Fully Aware	Partially Aware	Unaware	Total
General	48	18	6	72
OBC	62	45	15	122
SC	22	41	45	108
ST	14	32	52	98
Total	146	136	118	400

Interpretation:

The calculated Chi-Square value is $\chi^2_{\text{cal}} = 54.21$, which exceeds the critical value of $\chi^2_{0.05, 6} = 12.59$ ($p < 0.001$). This indicates a statistically significant relationship between social category and scheme awareness. Households from General and OBC categories show higher rates of complete awareness, while SC and ST households exhibit higher concentration in the partial and unaware classifications, pointing to disparities in information reach.

➤ **Independent Samples t-test: Credit/Subsidy Volume by Gender**

This test compares the average annual financial benefit from agricultural schemes received by male-headed vs. female-headed households.

Gender of Household Head	Sample Size (n)	Mean Annual Benefit (INR)	Standard Deviation (σ)	Calculated t-value	p-value
Male-Headed	312	14,850	4,200	= 5.84	< 0.01
Female-Headed	88	9,420	3,150		

Interpretation:

The calculated t-value (5.84) exceeds the critical threshold ($t_{\text{crit}} = 1.96$) at a 5% significance level, indicating a significant difference in mean annual benefits between male and female-headed households. This variance is largely driven by institutional patterns where land titles, which often serve as primary eligibility verification for programs like *Krishi Bhagya* and *SMAM*, are predominantly registered under male names.

➤ **One-Way ANOVA: Welfare Access Index across Landholding Groups**

This test assesses whether the average Welfare Access Index score (calculated on a scale of 0 to 100 based on scheme utilization, timeliness, and satisfaction) varies by landholding size.

Source of Variation	Degrees of Freedom (df)	Sum of Squares (SS)	Mean Square (MS)	F-Ratio	Significance (p)
Between Groups	3	14,250.4	4,750.13	= 24.12	< 0.001
Within Groups	396	77,980.6	196.92		
Total	399	92,231.0			

Interpretation:

The F-statistic of 24.12 is statistically significant ($p < 0.001$), confirming that the Welfare Access Index varies substantially across landholding tiers. Post-hoc comparisons indicate that semi-medium and large farmers secure significantly higher policy access scores than marginal farmers and landless laborers, showing a concentration of resource distribution among larger landholdings.

➤ **Multiple Linear Regression: Determinants of the Welfare Access Index**

This regression models the primary socio-economic factors influencing a household's Welfare Access Index score (Y_{WAI}).

Predictor Variables	Coefficients (β)	Standard Error	t-value	Significance (p)
Constant (β_0)	22.45	3.12	7.20	< 0.001
Operational Land Size (X_{Land})	8.64	1.14	7.58	< 0.001
Annual Household Income (X_{Income})	0.42	0.12	3.50	< 0.01
Social Group Dummy (X_{Caste} , SC/ST=1)	-5.12	1.45	-3.53	< 0.01
Education Status (X_{Edu})	2.18	0.65	3.35	< 0.01
Digital Literacy Dummy (X_{Digital} , Literate=1)	11.34	1.82	6.23	< 0.001

Interpretation:

The model explains 58.4% of the variance in policy access ($R^2 = 0.584$). Operational land size and digital literacy emerge as strong positive predictors of higher scheme access. Conversely, the negative coefficient for the social group dummy indicates that SC/ST status correlates with lower access when other variables are held constant, highlighting persistent structural barriers to entry.

Findings

- **Information Disparities:** Scheme awareness is unevenly distributed across social categories; 41.6% of surveyed SC households and 53.0% of ST households in remote areas like H.D. Kote reported limited awareness of high-subsidy mechanization programs.
- **Institutional Constraints Linked to Land Titles:** Major asset-building programs require clear land ownership documentation, which limits access for landless laborers and female farmers who lack formal titles.
- **The Complexity of Digital Delivery:** While digital integration via the FRUITS and DBT portals has reduced administrative leakage, it has introduced barriers for elderly and digitally illiterate farmers due to biometric mismatches and complex registration processes.
- **Concentration of Capital Subsidies:** High-value capital programs, such as custom hiring centers and protective farming infrastructure under *Krishi Bhagya*, show higher adoption among larger landholders due to the required upfront investments or co-financing elements.

Suggestions

- **Decentralized and Simplified Registration:** Modify state registration workflows by organizing localized mobile data camps managed by Gram Panchayat officers to resolve land registry errors directly at the village level.
- **Expanding Subsidies for Shared Infrastructure:** Shift the policy focus from individual asset ownership to community-based infrastructure, scaling up custom-hiring machinery centers operated directly by smallholder cooperatives and women's self-help groups.
- **Alternative Verification Options:** Introduce alternative eligibility verifications, such as certified joint-cultivation agreements or village-verified tenancy records, to enable landless tenant farmers to access crop loans and insurance protections.
- **Targeted Information Portals:** Establish dedicated, multi-lingual agricultural help desks within local markets (*Raitha Santhe*) to assist digitally illiterate applicants with scheme onboarding.

Conclusion

The empirical analysis of agricultural development programs in Mysuru District indicates that while current policies provide substantial rural support, they encounter structural limitations regarding social inclusivity. Operational land size, institutional land ownership, and digital literacy remain primary determinants of program access, which can result in resource concentration among larger agricultural holdings. To achieve more balanced rural development, agricultural policy frameworks must transition from general, volume-driven delivery models toward target-specific, equity-focused interventions. Addressing structural bottlenecks, lowering digital barriers, and decoupling eligibility from formal land ownership can help create an agricultural welfare system that effectively supports vulnerable rural populations.

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