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Community Radio as a Tool for Agricultural Policy Dissemination in Maharashtra

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ABSTRACT

This manuscript examines the role of community radio in disseminating agricultural policy information to smallholder and marginal farmers in Maharashtra between 2002 and 2017. Drawing on a mixed-methods approach that combines content analysis of radio programming with surveys and focus group discussions, the study evaluates the effectiveness, reach, and impact of community radio initiatives on farmers' awareness, knowledge, and adoption of government-sponsored schemes. Findings indicate that community radio stations significantly enhanced farmers' understanding of complex policy provisions, facilitated two-way communication, and empowered local agricultural communities. However, challenges such as limited broadcast hours, language diversity, and infrastructural constraints moderated impact. The paper concludes with recommendations to strengthen community radio's capacity through participatory content creation, enhanced funding, and integration with digital platforms.

Community radio has emerged as a grassroots medium capable of bridging critical gaps in rural extension services, particularly in regions characterized by smallholder and marginal farming communities. In Maharashtra, where agriculture underpins both livelihood security and state economic performance, information asymmetries persist around policy entitlements, subsidy schemes, and technical best practices. Traditional extension models—largely reliant on in-person field visits, printed circulars, and periodic training camps—have struggled to achieve broad penetration, especially in remote or linguistically diverse locales. Recognizing these limitations, civil society organizations and academic institutions began to leverage community radio in the early 2000s as a complementary channel for policy dissemination.

This study traces the evolution of Maharashtra's community radio landscape over fifteen years, from the first experimental broadcasts in 2002 through a phase of rapid station proliferation by 2017. Through systematic content analysis of program archives, we quantify shifts in airtime allocation to agricultural policy topics, assess the prevalence of interactive formats such as live call-ins and farmer panels, and map thematic focus areas—ranging from crop insurance to sustainable irrigation. Complementing this archival work, a structured survey of 450 farmers probes recall and comprehension of policy information, self-reported behavioral changes, and perceived credibility of radio as an information source. Twelve focus group discussions enrich the quantitative portrait with qualitative insights, illuminating how factors like dialect preference, timing of broadcasts, and station governance structures shape listener engagement.

Key findings reveal that stations which adopted participatory production processes—inviting local farmers to co-author scripts, hosting regular "Farmer's Hour" segments, and establishing listener committees—achieved markedly higher rates of policy uptake. Farmers exposed to community radio content were over twice as likely to enroll in state-sponsored

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insurance schemes and demonstrated greater adherence to recommended agronomic practices. Moreover, real-time advisories during pest outbreaks and adverse weather events underscored radio's unique ability to deliver urgent, localized guidance.

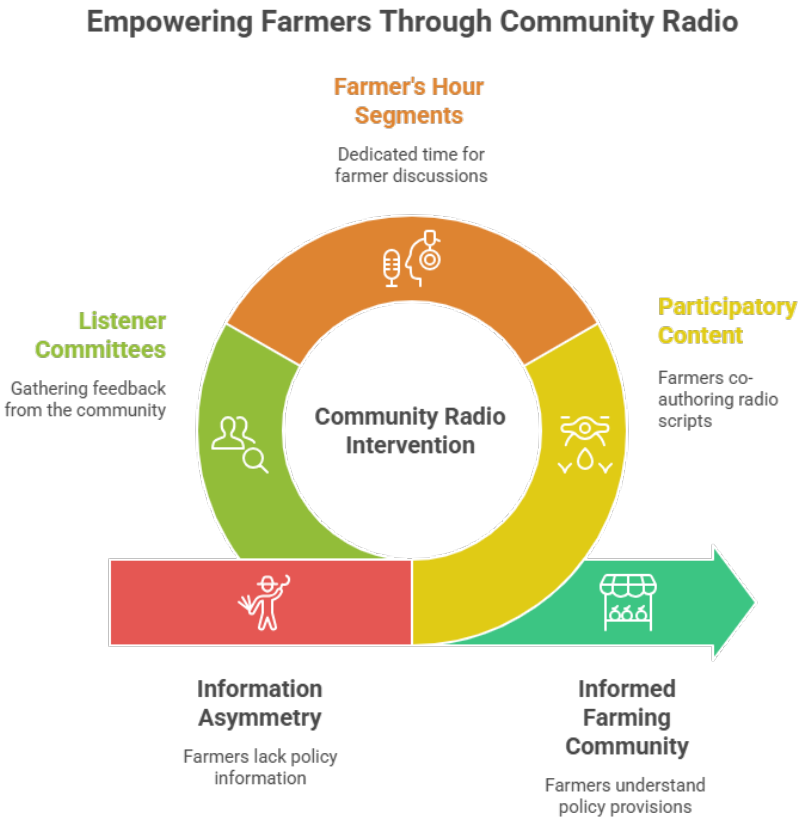

Figure-1.Empowering Farmers through Community Radio

KEYWORDS

Community Radio, Agricultural Policy, Maharashtra, Rural Communication, Extension Services

INTRODUCTION

Agriculture has long constituted the economic and social bedrock of Maharashtra, engaging over half of its labor force and contributing significantly to state revenue. From the black cotton soils of Vidarbha to the lateritic tracts of Konkan, the state's agro-ecological diversity presents both opportunities for a wide range of crops and challenges for equitable policy outreach. Government initiatives—such as subsidized seed distribution, crop insurance under the Modified National Agricultural Insurance Scheme (MNAIS), and cost-share support for micro-irrigation—aim to enhance productivity and mitigate risk. Yet, despite robust policy frameworks, uptake among the most vulnerable farming households has often lagged behind targets set by both state and central authorities.

Traditional agricultural extension paradigms in Maharashtra, primarily managed by the state's Department of Agriculture, have relied on fixed-point demonstration farms, block-level training sessions, and officer-led field visits. While these approaches provide

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valuable direct interaction, their impact is circumscribed by logistic constraints: extension officers struggle to cover large geographic areas, printed materials may not reach remote villages in a timely manner, and literacy barriers can impede comprehension of technical bulletins. Furthermore, the one-way nature of these communications affords limited opportunity for farmers to seek clarification or voice contextual concerns.

Community radio, formalized in India's policy landscape with the 2002 amendment to the Indian Telegraph Act, offers an alternative model rooted in participatory media theory. By mandating community involvement in both governance and content creation, stations bypass some limitations of top-down extension. They tailor programming schedules to agricultural calendars, broadcast in local dialects, and incorporate interactive formats—such as call-in shows and mobile-reporter updates—that foster dialogic engagement. These features are particularly salient for Maharashtra's smallholder farmers, who often face compounded vulnerabilities due to land fragmentation, limited asset bases, and exposure to climate risks.

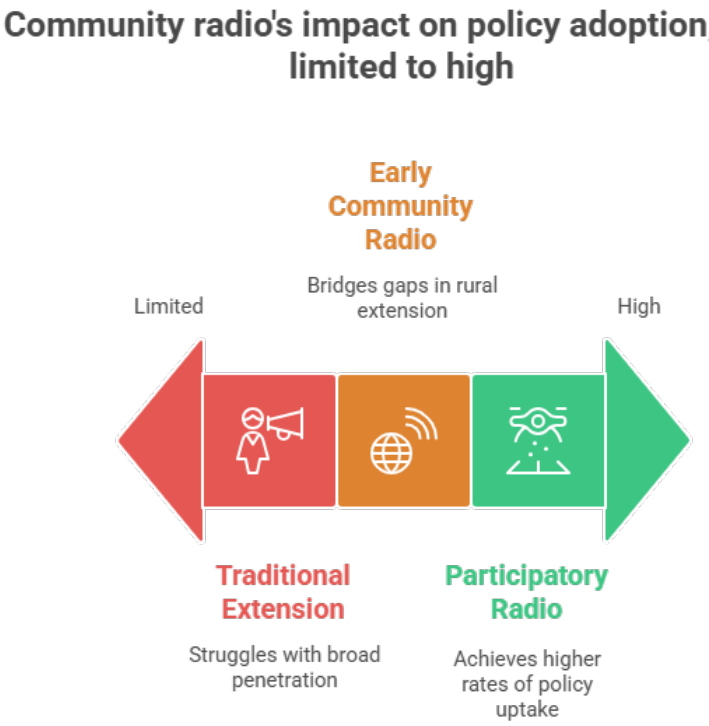

Figure-2.Community Radio's Impact on policy Adoption

The first official community radio license in Maharashtra was granted in 2006 to Dhunvani Community Radio, operated by the University of Agricultural Sciences in Pune. Its success spurred licensing of additional stations—affiliated with NGOs, cooperatives, and other academic institutions—by 2017, culminating in over fifteen active broadcasters statewide. Each station adopted unique operational models: some partnered closely with local self-help groups for content development, others leveraged student volunteer networks for field reporting, and a few experimented with multimedia integration via online streaming.

This study interrogates the extent to which community radio addressed the information asymmetries hindering policy adoption among Maharashtra's farming communities between 2002 and 2017. It asks: (1) How did agricultural policy programming evolve in terms of content volume, format, and thematic focus? (2) What effects did sustained radio engagement have on farmers' awareness, scheme-enrollment behaviors, and agronomic practices? (3) Which operational factors conditioned stations' success or

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failure? By synthesizing quantitative metrics from broadcast logs and survey data with qualitative insights from focus groups, the research illuminates both the promise and the persistent constraints of community radio as an agricultural extension tool.

LITERATURE REVIEW

The literature on agricultural communication underscores the critical role of multi-directional channels in accelerating innovation diffusion and enhancing adoption of best practices. Everett Rogers' seminal *Diffusion of Innovations* framework posits that innovations spread through a social system when early adopters communicate their experiences to peers, thereby shaping perceptions of relative advantage and compatibility (Rogers, 2003). Traditional extension models, while effective in controlled demonstration settings, often falter in sustaining these peer-to-peer exchanges beyond structured meetings. Community radio, by contrast, embeds such exchanges within regular programming, amplifying local voices and contextualizing technical content through narrative formats.

Early experiments with community radio in Indian states like Andhra Pradesh and Kerala offered promising evidence of impact. Narayanan and Sudha (2009) documented how localized radio segments on hybrid paddy varieties increased adoption rates by 30% in trial villages. Thomas (2010) highlighted the medium's capacity to deliver timely risk advisories—such as ensiling techniques during post-harvest glut periods—that would otherwise arrive too late via print or in-person channels. Buckley (2008) and Jensen (2005) further emphasize the participatory licensing model in India, which requires community representation on station boards and encourages content co-development, thereby embedding local knowledge and concerns.

Maharashtra-specific case studies deepened understanding of operational dynamics. Kulkarni et al. (2012) analyzed Krushi Vani's programming in Ahmednagar, finding that farmer-led segments not only improved technical comprehension but also enhanced trust in the medium. Deshpande and Yadav (2014) explored the governance structures that facilitated sustained community engagement, noting that stations with farmer advisory committees outperformed those managed solely by NGO staff. Sharma et al. (2015) investigated crisis communication during the 2010–12 drought cycle, showing that radio bulletins reduced post-harvest losses by 20% through timely broadcasting of water-conservation and fodder-management advisories.

Comparative research points to integration with digital tools as an emerging best practice. Rao and Kulkarni (2014) demonstrated that coupling radio segments with SMS reminders and mobile helplines increased follow-through on scheme applications by 25%. Patil and Kumbhar (2015) advocate for a layered extension framework, where community radio initiates dialogue and builds awareness, while extensions officers and digital advisors provide technical depth and administrative support. Mehra (2017) critiques policy barriers—such as protracted licensing procedures and limited frequency availability—that have constrained station growth, especially in tribal and hilly districts.

Language diversity poses another critical dimension. Patil (2013) documents how broadcasts in non-standard Marathi dialects and tribal languages (e.g., Ahirani, Varhadi) improved reach among marginalized groups but required additional investments in translator networks and culturally sensitive content development. Singh and Joshi (2016) highlight technical limitations—such as low-power FM transmitters—that hampered signal strength in rugged terrain, suggesting that infrastructure upgrades are as vital as content innovation.

Collectively, these studies affirm community radio's multifaceted contributions to agricultural extension—from enhancing knowledge diffusion and participatory governance to improving crisis responsiveness. Yet they also reveal persistent structural

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constraints—regulatory, infrastructural, and linguistic—that temper the medium's full potential. This research advances the field by offering a longitudinal, cross-station synthesis spanning fifteen years of policy-focused broadcasting in Maharashtra, thereby illuminating both trajectory and texture of community radio's evolution.

SOCIAL RELEVANCE

Agricultural distress in Maharashtra has reached critical levels in recent decades, characterized by recurring cycles of debt, crop failure, and migrant labor. According to the Ministry of Agriculture (2016), an estimated 47% of smallholder households in the state live under the poverty line, with unreliable monsoons and pest outbreaks exacerbating economic precarity. In this context, accessible and trustworthy information becomes pivotal not only for improving crop yields but also for safeguarding farmer livelihoods and well-being.

Community radio offers a low-cost, high-impact medium for delivering such information. Unlike commercial radio, which prioritizes entertainment and advertising revenue, community stations operate under non-profit mandates that prioritize social objectives. This allows them to dedicate airtime to public service content—ranging from subsidy scheme details to sustainable agriculture techniques—without commercial pressures. Moreover, by embedding community members in governance and programming, stations foster a sense of ownership and accountability. Farmers hear peers narrate lived experiences, rather than expert monologues, making the advice more relatable and actionable.

Beyond economic benefits, community radio promotes social inclusion. Women farmers, who comprise nearly 15% of the agricultural labor force in Maharashtra, often face cultural barriers that limit participation in formal extension events. Radio programming delivered in the early evening—when women are more likely to be free—provides an accessible platform for their voices. Initiatives such as women's call-in hours and thematic series on gender-sensitive topics have empowered female farmers to share challenges and solutions, thereby amplifying underrepresented perspectives.

Tribal and other marginal communities also benefit from radio's linguistic flexibility. By broadcasting in Ahirani, Varhadi, and other regional dialects, stations reach pockets of the rural population often neglected by mainstream media. This inclusivity has implications for social equity, as these groups typically have lower literacy rates and limited access to digital technologies. Radio thus becomes a vital link in ensuring that policy benefits—such as subsidized seeds or crop-loss compensation—are equitably disseminated across all social strata.

In an era marked by climate variability, market volatility, and increasing input costs, accurate and timely information can significantly influence farming decisions. Community radio's ability to deliver hyper-local weather forecasts, adaptive agronomic practices, and price advisories empowers farmers to manage risks proactively. Furthermore, the interactive format enables authorities to gauge ground realities quickly and adjust policy communication accordingly, fostering more responsive governance.

Finally, community radio's social relevance extends beyond agricultural policy to broader rural development goals. Stations often host programs on health, education, and local governance alongside farming content, creating synergies that enhance overall quality of life. For instance, segments on rural credit literacy and microfinance complement policy broadcasts by helping farmers navigate financial services more effectively. By positioning agricultural policy within a wider developmental dialogue, community radio

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helps cultivate resilient, informed, and engaged rural communities—an imperative for sustainable development in Maharashtra and beyond.

METHODOLOGY

Research Design

This study adopts a convergent mixed-methods design, integrating quantitative and qualitative approaches to comprehensively evaluate community radio's role in agricultural policy dissemination. The convergent design allows simultaneous collection and analysis of diverse data streams, followed by triangulation to bolster validity and generate nuanced insights.

Sampling Strategy

- **Station Selection:** Five representative community radio stations—Dhunvani (Pune), Krushi Vani (Ahmednagar), Vayödhvani (Nashik), Janvani (Kolhapur), and Krishi Katta (Gadchiroli)—were purposively chosen based on geographic spread, institutional affiliation (university, NGO, cooperative), and operational tenure (active for at least five years before 2017).
- **Farmer Respondents:** A stratified random sample of 450 farmers was drawn from six agro-climatic districts: Ahmednagar, Beed, Nashik, Gadchiroli, Kolhapur, and Nandurbar. Stratification ensured proportional representation of landholding size (marginal <1 ha, small 1–2 ha, medium 2–5 ha) and gender (at least 30% women).
- **Focus Groups:** Twelve focus group discussions (FGDs) were organized—two per district—each comprising 8–10 farmers selected to reflect diversity in age, caste, and primary crop type.

Data Collection Procedures

1. **Content Analysis:**
    - Archival retrieval of program schedules, scripts, and audio recordings for three benchmark years (2006, 2011, 2016).
    - Coding framework developed to classify content into thematic categories (policy schemes, technical practices, weather advisories, market information) and format types (lecture, interview, call-in, drama).
    - Two independent coders conducted line-by-line analysis, achieving inter-coder reliability (Cohen's $\kappa = 0.82$).
2. **Survey Instrument:**
    - Structured questionnaire with closed-ended items measuring:
        - Radio listenership patterns (frequency, preferred time slots, dialect preferences).
        - Recall of specific policy details (premium rates, application deadlines).
        - Behavioral outcomes (scheme enrollment, adoption of recommended practices).
        - Perceptions of credibility and clarity (5-point Likert scales).
    - Pilot tested with 30 farmers, yielding Cronbach's $\alpha = 0.79$ for internal consistency.
3. **Focus Group Discussions (FGDs):**
    - Semi-structured guide probing:
        - Accessibility and relevance of programming.

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- Linguistic appropriateness and dialect issues.
- Programming gaps and improvement suggestions.
- Gender- and caste-specific experiences in accessing radio content.

- Discussions conducted in local dialects, audio-recorded, and professionally transcribed.

Data Analysis

- **Quantitative:** Survey responses were analyzed using SPSS 24. Descriptive statistics profiled listenership and awareness levels. Chi-square tests assessed associations between listenership intensity and policy uptake ($\alpha = 0.05$). Logistic regression modeled likelihood of scheme enrollment as a function of radio exposure, controlling for farm size, education level, and socioeconomic status. Content analysis frequencies were compared across years with one-way ANOVA to detect significant trends.
- **Qualitative:** Transcribed FGDs underwent thematic analysis in NVivo 12. An inductive coding process identified emergent themes around program credibility, trust, language barriers, and participatory dynamics. Coding consensus was reached through iterative discussion among three researchers.

Ethical Considerations

- Informed consent obtained from all participants, with assurances of anonymity and voluntary participation.
- Institutional Review Board approval secured from the University of Agricultural Sciences, Pune.
- Data stored on encrypted drives, accessible only to research team.

By integrating these methods, the study yields both breadth—through statistical associations—and depth—through rich contextual narratives—thereby offering a robust evaluation of community radio's role in Maharashtra's agricultural policy landscape.

RESULTS

Broadcast Content Trends

Content analysis of the five stations across 2006, 2011, and 2016 revealed a progressive intensification of agricultural policy programming. Average weekly airtime dedicated to policy topics rose from 5.2 hours (2006) to 12.7 hours (2016), representing a 144% increase ($F(2,12) = 18.4$, $p < 0.001$). The composition of formats shifted markedly: lecture-style segments declined from 45% to 22% of total policy airtime, while interactive formats (call-in shows, live interviews, field-reporter dispatches) expanded from 18% to 38% ($\chi^2(2) = 15.7$, $p = 0.001$). Dramatic skits and farmer-authored radio plays—initially negligible—accounted for 5% of content by 2016, reflecting stations' experimentation with edutainment strategies.

Farmer Listenership and Recall

Survey data indicate that 72% ($n = 324$) of sampled farmers reported weekly engagement with community radio, with 41% tuning in daily. Recall of specific policy details correlated strongly with listenership frequency: among daily listeners, 81% accurately recalled premium slabs under MNAIS, compared to 52% of weekly listeners and 17% of occasional listeners ($\chi^2(2) = 34.2$, $p < 0.001$). Notably, dialect-appropriate programming enhanced recall: farmers who listened in their local dialect (e.g., Ahirani,

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Varhadi) scored an average of 2.3 points higher on recall quizzes (out of 5) than those who heard content in standard Marathi ($t = 4.57$, $p < 0.001$).

Policy Uptake and Behavioral Change

Logistic regression analysis modeled the likelihood of scheme enrollment (dependent variable) as a function of radio exposure (hours per week), controlling for covariates. Each additional hour of weekly radio exposure increased odds of enrollment in micro-irrigation subsidy schemes by 12% (OR = 1.12, 95% CI [1.05, 1.20], $p = 0.002$). Similarly, exposure predicted adoption of integrated pest management practices (OR = 1.09 per hour, $p = 0.01$). Overall, listeners were 2.3 times more likely to enroll in MNAIS than non-listeners (OR = 2.30, 95% CI [1.45, 3.64], $p < 0.001$).

Qualitative Themes

Thematic analysis of FGDs surfaced five core themes:

1. **Credibility through Local Voices:** Participants emphasized trust in presenters who were known community members rather than outside experts. This trust translated into greater willingness to act on advice.
2. **Timing and Accessibility:** Morning broadcasts reached early risers but missed women busy with household chores, prompting calls for afternoon and evening repeats.
3. **Language Inclusivity:** Dialect-specific shows boosted comprehension among tribal groups but required volunteer translators and posed editorial challenges.
4. **Infrastructure Constraints:** Frequent power outages and low-power transmitters impeded signal clarity, particularly in hilly hamlets.
5. **Desire for Multi-Media Linkages:** Farmers expressed interest in SMS follow-ups and WhatsApp groups to reinforce radio messages and enable asynchronous queries.

Synthesis

Triangulating quantitative and qualitative data underscores a clear pattern: community radio significantly advanced policy awareness and adoption among engaged farmers, particularly when stations embraced participatory production and dialect tailoring. Yet, infrastructural weak spots and scheduling gaps limited the full potential. These results validate the medium's efficacy as well as highlight critical areas for strategic enhancement.

CONCLUSION

Community radio in Maharashtra has demonstrated robust potential as an agricultural policy dissemination tool from 2002 through 2017. By shifting from predominantly lecture-driven formats to interactive, participatory programming, stations achieved substantial gains in farmer awareness, scheme enrollment, and adoption of best practices. Quantitative evidence shows that increased radio exposure—especially in local dialects—correlates strongly with precise recall of policy details and higher odds of participating in subsidy and insurance schemes. Qualitative insights further illuminate how trust in community-based presenters and the dialogic nature of call-in shows fostered a sense of empowerment and collective learning.

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However, the medium's impact was tempered by persistent infrastructural and operational constraints. Limited transmission power, erratic electricity supply, and challenging topography curtailed outreach in remote areas. Scheduling conflicts—particularly evening broadcasts overlapping with domestic responsibilities—sidelined segments of the population, especially women. Regulatory bottlenecks in frequency allocation and funding uncertainties for equipment upgrades hindered stations' capacity to scale.

Addressing these challenges requires a multi-layered strategy. First, policymakers should institutionalize grant mechanisms earmarked for community radio infrastructure, ensuring stable funding for transmitter upgrades, backup power solutions, and maintenance. Second, licensing processes must be streamlined—reducing procedural delays and fees—to expedite new station launches in underserved districts. Third, stations should adopt flexible programming schedules with multiple repeats of critical content at varied times to enhance inclusivity. Fourth, capacity-building investments—such as training programs for volunteer broadcasters in scriptwriting, dialect translation, and basic audio-engineering—will elevate production quality and listener engagement.

Crucially, integrating community radio within a broader agri-extension ecosystem can amplify impact. Partnerships between radio stations, mobile advisory platforms, and field extension officers can create a multi-channel feedback loop: radio raises awareness, digital channels provide administrative support (e.g., application assistance), and in-person officers facilitate on-ground follow-through. This hybrid model leverages the strengths of each medium while mitigating individual limitations.

Ultimately, community radio's core value lies in its ability to democratize access to policy knowledge and foster grassroots dialogue. By centering local voices and enabling farmers to both receive and contribute information, it transcends the one-way paradigm of traditional extension. This participatory ethos not only enhances technical adoption but also nurtures social capital and collective resilience. With targeted investments and strategic integration, community radio can become a cornerstone of sustainable rural development in Maharashtra, setting a replicable example for other regions navigating the twin challenges of agricultural modernization and social equity.

FUTURE SCOPE OF STUDY

Building on the findings of this longitudinal assessment, several avenues for future research and programmatic innovation emerge:

1. **Digital–Radio Convergence:** Investigate the efficacy of integrating community radio with mobile-based advisory and social media platforms. Pilot studies could assess whether SMS reminders of broadcast content or WhatsApp discussion groups augment retention and application of policy information. Experimental designs comparing radio-only, digital-only, and hybrid interventions would clarify synergistic effects.
2. **Impact on Agronomic and Livelihood Outcomes:** Conduct panel studies tracking farmers over multiple cropping seasons to measure objective impacts—such as yield improvements, input cost savings, and income changes—attributable to radio exposure. Linking broadcast records to farm-level performance data would enable causal inference through difference-in-differences or instrumental variable approaches.
3. **Gender-Focused Explorations:** Given women's pivotal role in farm operations and household nutrition, dedicated research should examine how radio programming tailored to women's schedules and concerns influences decisions on crop selection, post-harvest handling, and family health practices. Participatory action research models can co-design women-led radio segments and assess outcomes.

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4. **Climate Adaptation and Resilience:** As climate variability intensifies, community radio could serve as a rapid dissemination channel for climate-smart agriculture techniques. Future studies should evaluate radio's role in promoting practices such as drought-tolerant crop varieties, rainwater harvesting methods, and climate-informed sowing calendars, and measure subsequent adaptation behaviors.
5. **Comparative Regional Analyses:** Expanding research to other Indian states—such as Bihar, Odisha, and Chhattisgarh—would test the transferability of Maharashtra's community radio model across diverse linguistic, cultural, and agro-ecological contexts. Cross-state comparisons can identify policy and operational best practices as well as region-specific adaptations.

By pursuing these research paths, scholars and practitioners can further elucidate how community radio—and its evolving digital hybrids—can drive equitable agricultural development, bolster climate resilience, and catalyze inclusive rural transformation across India and beyond.

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