ORIGINAL ARTICLE

Cultural and Community Dynamics in Cultivating the Change: Integrating Libraries into Agricultural Development Framework

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ABSTRACT

This study examines the social-cultural practices, and community dynamics influencing the adoption of agricultural technologies. Findings reveal a predominantly male and literate respondent population with extensive farming experience, highlighting potential resistance to change due to entrenched traditional practices. Trust, social networks, and collective action emerge as critical enablers of technology adoption, while financial concerns and reluctance to abandon traditional methods pose challenges. The study underscores the necessity of community-driven interventions and risk mitigation strategies to foster technology uptake among farmers. The study has emphasized the role of stakeholders and libraries in addressing the socio-cultural and community barriers in transforming agricultural practices.

INTRODUCTION

In rural and agricultural communities, cultural and community dynamics significantly influence the flow of information, decision-making processes, and adoption of modern farming practices. Language barriers, traditional beliefs, and social hierarchies act as barriers to disseminating and applying agricultural information. The rural libraries, Mandal libraries or gram panchayat libraries, Agricultural University libraries, and the agricultural information centers, have to act as hubs for disseminating the knowledge and

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to assist the farmers to overcome the barriers. However, libraries can't strive alone in this, the collaboration of other stakeholders like government agencies, agricultural experts, and agri-tech companies, NGOs, local community leaders very much essential. The collective resources and efforts of stakeholders can create an inclusive and sustainable ecosystem to empower farmers to apply modern technology and practices respecting their traditions and community beliefs. The study has attempted to explore the cultural and community drawbacks affecting agri-tech adoption, focusing on community norms, information sharing, trust and resistance to change, and farmers' attitudes toward modern methods. The study has proposed to integrate libraries into the agricultural development framework for the benefit of the farmers' community in providing better access, to reliable sources of information and knowledge to assist them in their decision-making process.

REVIEW OF LITERATURE

In rural India, Internet connectivity is slow and unreliable; due to the wireless communication various issues like multi-path propagation, which occurs due to the buildings trees, etc. the Internet system is not able to work consistently[1]. Akhter & Sofi[2] explained the use of IoT in Precision agriculture.While applying and using agri-tech, cost analysis is vital due to the high costs of sensors, gateways, base station infrastructure, and maintenance of these technologies.Therefore, they are unaware of IT to use in agricultural activities and farmers are not able to accept the trendy techs early. So, applying technologies in agriculture is very slow, and required to educate the farmers to produce the best products[3].

Pathak *et al*[4] conducted a study in the Bundelkhand region, India, and examined the farmers' awareness of climate variability and its impacts on them.The results revealed that most of the respondents were well-informed about changes in crop cycles (81.87%), new pests and diseases (63.12%), and natural hazards like earthquakes and cyclones (69.06%). And also, four principal components influencing awareness; natural hazards (.717), soil productivity (.681), pest and disease emergence (.775) excess water in the surface (.818), and decline in groundwater level (.738). Silva[5]

investigated the influence of social networks on the process of agricultural knowledge transfer as a substitute for conventional extension methods. The information network's primary node was determined to be extension officers. The role of contact farmers was prominent in paddy farming in Sri Lanka as they provided the interconnection between farmers and extension officers by sharing information. It also found that every actor in the network had a strong connection and similarly influenced one another. Furthermore, while encouraging farmers to use technology, the contact farmers' strategy can be effectively implemented as an affordable extension tool in underdeveloped nations.

Anand *et al* [6]attempted to explore how much farmers utilize and have access to ICTs, a survey was carried out in 2019. The survey was conducted among 100 farmers of Katihar and Samastipur districts in Bihar. The study evidenceshows that mobile phones were highly accessible followed by television and radio among the farmers in Meghalaya, Haryana, Maharashtra, and Rajasthan Additionally, the statistics showed that about 80% of respondents had an internet connection, and 77% of respondents used WhatsApp to obtain information. These insights highlight the interplay of technology, education, social dynamics, and infrastructural challenges in transforming farming practices. They also underscore the importance of targeted interventions to enhance technology adoption in rural agriculture. Therefore, an attempt has been made to explore the drawbacks of Social, and cultural practices and Community dynamics in applying technologies in farming in the Southern Region of Karnataka and highlighted on integrating the libraries in the agricultural development framework for the benefit of the farmers' community.

OBJECTIVES

The objectives are:

- To assess the role of social networks and information sharing in influencing farmers' decisions.
- To identify key enablers and barriers within social, cultural, and community dynamics affecting agricultural technology adoption.

- To evaluate farmers' resistance to change and its contributing factors.

METHODOLOGY

The study was conducted by a survey among the farmers of five districts of Southern Karnataka, i.e., Bangalore Urban, Mandya, Hassan, Chamarajnagar, and Chikkaballapur. 150 responses were collected from each district; therefore, the study sample is 750. A structured questionnaire prepared in the regional (Kannada) language was used as a checklist, interview, and discussion methods adopted for the data collection.

RESULTS

Table 1: Respondents' demographic characteristics

Criteria	Responses	Frequency	Total
Gender	Male	684 (91.2%)	750 (100%)
	Female	66 (8.8%)	
Educational level	Literate	546 (72.8%)	750 (100%)
	Illiterate	204 (27.2%)	
Agricultural Experience	Low (0-10 Years)	80 (10.7%)	750 (100%)
	Medium (11-20 Years)	204 (27.2%)	
	High (above 20 years)	466 (62.1%)	

The majority of respondents are male (91.2%), 8.8% are female respondents. The majority of respondents are literate (72.8%), while 27.2% are illiterate. The high literacy rate is promising for the adoption of new technologies, as education generally correlates with better understanding and willingness to adopt innovations. 62.1% of respondents have a high level of agricultural experience over 20 years, while 27.2% have a medium level of experience (11-20 years) and only 10.7% have a low level of experience (0-10 years). This suggests that the majority of the respondents are seasoned farmers, likely possessing traditional knowledge and potentially resistant to change due to established practices.

Table 2: Drawbacks of Social, cultural practices and Community dynamics in applying technologies in farming

Criteria	Drawbacks	Strongly Agree	Agree	Un decided	Disagree	Strongly Disagree
Information Sharing	Sharing valuable information about new technology in social network	308 (41.1%)	335 (44.7%)	96 (12.8%)	10 (1.3%)	1 (0.1%)
	Participating in social networks to hear about new technology	252 (33.6%)	392 (52.3%)	95 (12.7%)	10 (1.3%)	1 (0.1%)
Social Proof	Sharing of information about adopting technology successfully	538 (71.7%)	169 (22.5%)	36 (4.8%)	6 (0.8%)	1 (0.1%)
	Positive feedback from other farmers	560 (74.7%)	152 (20.3%)	31 (4.1%)	6 (0.8%)	1 (0.1%)
	Testimonials from other farmers	560 (74.7%)	148 (19.7%)	36 (4.8%)	6 (0.8%)	0 (0%)
Trust	Recommendation by someone they know interest	644 (85.9%)	96 (12.8%)	9 (1.2%)	1 (0.1%)	0 (0%)
Group Norms	Social Norms and expectation Community	196 (26.1%)	439 (58.5%)	107 (14.3%)	8 (1.1%)	0 (0%)
	Adopting technology needs to be added social norms of the community	167 (22.3%)	465 (62.0%)	110 (14.7%)	8 (1.1%)	0 (0%)

Criteria	Drawbacks	Strongly Agree	Agree	Un decided	Disagree	Strongly Disagree
Collective action	Community dynamics requirements in adopting technology	211 (28.1%)	395 (52.7%)	133 (17.7%)	11 (1.5%)	0 (0%)
	Collective and collaborative action is needed to adopt technology	179 (23.9%)	428 (57.1%)	130 (17.3%)	13 (1.7%)	0 (0%)
Resistance to change	I am strongly attached to traditional practices	112 (14.9%)	513 (68.4%)	40 (5.3%)	81 (10.8%)	4 (0.5%)
	I hesitate to adopt new technology	16 (2.1%)	194 (25.9%)	142 (18.9%)	381 (50.8%)	17 (2.3%)
	It may cause financial loss	44 (5.9%)	302 (40.3%)	135 (18.0%)	246 (32.8%)	23 (3.1%)

- **Information Sharing:** A high level of agreement (41.1% strongly agree, 44.7% agree) shows that social networks are crucial in spreading information about new technologies. Similarly, most respondents (33.6% strongly agree, 52.3% agree) participate in these networks to learn about technologies.

- **Social Proof:** The data shows that sharing successful technology adoption experiences is crucial, with 71.7% strongly agreeing and 22.5% agreeing. The majority of them strongly agree with positive feedback (74.7%) and testimonials (74.7%). They are also crucial in clarifying the farmers to adopt technology.

- **Trust:** 85.9% strongly agreethat the recommendations by a trusted individual influence their interest. Therefore, trust is also a decisive factor.

- **Group Norms:** 26.1% strongly agreed and 58.5% agreed with group norms. Similarly, 22.3% of them strongly agreed and 62.0% of them agreed that the need to integrate technology adoption into community norms has strong support. Thus, social norms heavily impact technology adoption.

- **Collective Action:** 28.1% strongly agreed and 52.7% agreed to collective action and 23.9% strongly agreed, 57.1% agreed to collaborative decision-making. It shows that community collaboration is pivotal in adopting modern methods.

- **Resistance to Change:** 68.4% agreed that they are strongly attached to traditional practices, 25.9% of them have a hesitation to adopt new technologies and 40.3% of them agreed that the financial loss. Therefore, resistance to change remains a challenge.

The data highlights the significance of trust, testimonials, and leveraging social networks in promoting agri-tech adoption. Community norms and collective action are essential enablers;thus, community-driven interventions are needed. Resistance to change, particularly attachment to traditional practices and financial risk aversion, needs to be addressed through risk-sharing mechanisms and demonstrations of economic benefits.

MAJOR FINDINGS

The findings emphasize a complex interplay of socio-demographic and cultural factors in technology adoption among farmers. The literate and experienced farming population demonstrated the opportunities and challenges both provide a foundation for understating and applying modern methods.Community beliefs and social networks play a key role in the effectiveness of information sharing, testimonials, and trust. The Farmers are significantly relying on recommendations from trusted individuals and feedback from colleagues successful with modern methods. However, resistance rooted in financial risk and traditional practices suggests the need for targeted support measures, such as demonstrations, subsidies, or risk-sharing schemes.

Overall, the study found the importance of addressing socio-cultural barriers and aligning technological interventions with community dynamics to enhance the adoption of agricultural innovations.

Role of stakeholders in addressing the Cultural and Community Dynamics Barriers along with Libraries

Government agencies and policymakers, agricultural extension officers, community

leaders and farmers organizations, technology developers and agri-tech companies, financial institutions and microfinance organizations, non-governmental organizations (NGOs), educational and research institutions, and media and communication platforms are considered stakeholders in addressing the gap identified in the study. Based on the above findings and the discussion the following suggestions have been made.

i. Government Agencies and Policymakers: Governments have a pivotal role in setting the foundation for large-scale technology adoption. Policies encouraging innovation, financial inclusion, and equitable resource distribution can transform the agricultural landscape.

  a. **Policy Development:** Governments have a pivotal role in setting the foundation for large-scale technology adoption. Policies encouraging innovation, financial inclusion, and equitable resource distribution can transform the agricultural landscape.

  b. **Risk Mitigation:** Programs like agricultural insurance and subsidy schemes must address farmers' financial apprehensions. For example, offering discounted rates on technology during pilot stages can foster early adoption.

  c. **Capacity Building:** Governments should invest in vocational training programs that enhance farmers' technical knowledge and confidence in using new tools.

Libraries can act as repositories of valuable information for farmers and can provide access to computers and the Internet, tutorial videos, resources on government schemes, and portals of technology providers.

ii. Agricultural Extension Officers: As the prime point of contact with farmers, extension services are key for bridging the gap in innovation and practice.

  a. **Training and Demonstrations:** Regular training showcasing the practical benefits of technology helps farmers ascertain the tangible outcomes. The field demonstrations provide clarity and assurance about usability and effectiveness.

  b. **Feedback Collection:** input from extension officers and farmers helps farmers rely on the information.

  c. **Continuous Support:** guidance in crop management, post-adoption services like troubleshooting assistance, enhances the trust level among farmers and ensures sustainable use.

Library personnel work collaboratively with agricultural extension officers to understand the farmers' need to design and develop the need-based information products to assist farmers.

iii. Community Leaders and Farmer Organizations

  a. **Community:** Driven solutions ensure collective buy-in and long-term adherence to new practices. Leaders who understand local dynamics can advocate effectively for innovation.

  b. **Advocacy**: Trusted figures in the community should champion the use of new technologies, sharing their own success stories to build confidence among peers.

  c. **Mobilization**: Farmer organizations can pool resources, enabling small-scale farmers to access costly technologies collectively.

  d. **Inclusivity**: Promoting women's and marginalized groups' participation ensures a more equitable distribution of benefits and fosters widespread acceptance.

Libraries can provide neutral and inclusive environments for fostering collaboration by facilitating collaboration and enabling peer learning.

iv. Technology Developers and Agri-Tech Companies: Developers have a significant position in ensuring technologies align with the unique needs of diverse farming communities.

  a. **User-Centric Design:** Affordable innovations suitable for local conditions like designing tools for illiterate farmers and audio instructions are needed.

  b. **Collaboration with Farmers:** Agri-tech developers need to collaborate with farmers to understand and address real-world challenges.

c. **Post-Adoption Support:** Agri-tech company services such as on-site training, and extended warranties to build trust and encourage continued use.

Libraries can bridge the digital divide in rural areas by providing access to technology and by conducting digital literacy/training programs for farmers.

v. **Financial Institutions and Microfinance Organizations:** Financial barriers often discourage farmers from exploring new technologies. Affordable financial solutions are critical to overcoming this obstacle.

a. **Microloans**: Small, low-interest loans tailored for farmers can facilitate the purchase of new tools without adding significant financial strain.

b. **Insurance Products:** Crop insurance and risk-sharing programs provide a safety net, ensuring farmers do not suffer significant losses if innovations fail or unforeseen events occur.

c. **Incentive Schemes:** Financial institutions can collaborate with governments and agri-tech companies to offer discounts, grants, or deferred payment options.

vi. **Non-Governmental Organizations (NGOs):** NGOs act as bridges between local communities and larger stakeholders, focusing on empowerment and equitable access to resources.

a. **Awareness Campaigns:** Conducting campaigns in local languages about the economic, social, and environmental benefits of adopting technology can dispel myths and resistance.

b. **Capacity Building:** Training programs tailored to the needs of illiterate or marginalized farmers ensure inclusivity.

c. **Facilitation:** NGOs can help coordinate pilot projects, gather feedback, and scale successful initiatives across regions.

vii. **Educational and Research Institutions:** Research institutions provide the knowledge base and training resources required to support farmers effectively.

d. **Innovation Research:** Universities and research centers should focus on low-cost, context-specific solutions for farming challenges.

e. **Data-Driven Decision-Making:** Leveraging research to identify barriers and effective interventions ensures efficient use of resources.

f. **Training Support:** Institutions can partner with agricultural extension services to create and distribute user-friendly educational materials.

(viii) **Media and Communication Platforms:** The media's reach and influence can amplify efforts to promote technology adoption.

a. **Success Stories:** Publishing and broadcasting of case studies of farmers adopted technology builds a narrative of trust and feasibility.

b. **Localized Content:** Creating region-specific materials in local dialects ensures inclusivity and comprehension.

c. **Engaging Campaigns:** Social media, radio, and television campaigns can serve as platforms for disseminating testimonials, product launches, and expert advice.

Libraries can serve as connecting points for farmers and key holders and their active role in educating farmers by hosting thematic events, partnering with media, delivering the knowledge, hands-on training programs, archiving success stories, and sharing it among farmers to inspire them to adopt innovations in for their benefit in their farming.

CONCLUSION

To promote agricultural technology adoption effectively, stakeholders must prioritize trust-building, leverage social networks, and encourage collective action within farming communities. Targeted strategies are very much needed to address the financial concerns and resistance to the change; it ensures sustainable adoption and abiding benefits. The cultural and community dynamics ominously influence the adoption of technology based on the information flow and decision-making process. The dynamics such as language,

traditional beliefs, and social hierarchies often act as barriers in disseminating and applying the agricultural information. Stakeholders' involvement plays a complementary role in addressing these issues. Integration of libraries into the agricultural development frameworks, the other stakeholders can provide accessible, reliable, and centralized information sources, services, and facilities to the farmers' community. Libraries empower individuals and adopt a sense of collaboration in the community, ensuring innovations in their farming for the benefit of the community. Libraries are indispensable tools for driving sustainable agricultural transformations.

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