Research Article

Indian Journal of Extension Education

Vol. 61, No. 3 (July–September), 2025, (42-46)

ISSN 0537-1996 (Print)
ISSN 2454-552X (Online)

Institutional Engagement and Its Role in Livelihood Transformation of Tribal Coffee Farmers in Araku Valley

Bailupati Lalu[1], Atanu Deb[2]* and Swati Suman[3]

[1]M.Sc. Scholar, [2]Associate Professor, [3]Ph.D. Scholar, Department of Agricultural Extension Education, M.S. Swaminathan School of Agriculture, Centurion University of Technology & Management, Odisha-761211, India
*Corresponding author email id: atanudeb@cutm.ac.in

HIGHLIGHTS

- Social Network Analysis (SNA) revealed that Naandi Foundation is the central institutional actor driving livelihood transformation in Araku Valley.
- Villages with multi-institutional engagement showed higher improvements in income, skill development, and gender empowerment.
- Collaborative institutional ecosystems enhanced community resilience and participation, moving farmers from subsistence to market-linked organic coffee production.

ARTICLE INFO

Keywords: Araku valley, Coffee farming, Institutional linkage, Social network analysis, Tribal livelihood.

https://doi.org/10.48165/IJEE.2025.61308

Conflict of Interest: None

Research ethics statement(s): Informed consent of the participants

ABSTRACT

Institutional engagement plays a critical role in shaping sustainable livelihoods in rural and tribal areas, where access to resources, markets, and services is often limited. The study conducted in 2024-2025 explored the impact of institutional involvement on the livelihood transformation of tribal coffee farmers in Araku Valley, Andhra Pradesh. Adopting an exploratory sequential mixed-method research design, the study surveyed 180 farmers across six villages using structured questionnaires, focus group discussions, and key informant interviews. Data were analyzed using Social Network Analysis (SNA) with UCINET software to map institutional linkages and assess centrality indicators. The findings revealed that the Naandi Foundation was the most influential institutional actor, maintaining strong and consistent linkages across all villages. Villages with higher institutional connectivity, such as Thudumu, Pakanakodi, and Doravalasa, reported significant improvements in income, skill development, gender empowerment, and market access. The convergence of multiple institutions in these areas created synergies that enhanced overall development outcomes. The study highlighted how collaborative institutional ecosystems foster resilience and build local capacity. It demonstrated how inclusive engagement transforms subsistence farming into market-oriented enterprises, providing a scalable model for rural development and emphasizing the importance of institutional coordination for sustainable livelihood outcomes in tribal regions.

INTRODUCTION

In many tribal and remote areas of India, achieving sustainable livelihoods continues to be a major challenge due to limited access to basic infrastructure, markets, and institutional services. These regions often experience a cycle of poverty and underdevelopment, where communities depend heavily on subsistence farming with very few external linkages. In such settings, institutions, whether governmental, non-governmental, or private, can play a transformative role (Singh et al., 2014; Albore, 2018; Singh et al., 2023). Institutional engagement refers to the active involvement of formal organizations in improving the livelihoods of communities

Received 11-06-2025; Accepted 20-06-2025

through support in areas like agriculture, skill development, market access, and social empowerment. When such engagement is consistent, inclusive, and responsive to local needs, it can significantly impact the quality of life in rural and tribal regions. Livelihood transformation involves more than just an increase in income (Shetunyenga, 2024). It includes better access to opportunities, improved capacity of individuals and groups, enhanced participation in decision-making, and more sustainable and secure futures (Gajbhiye et al., 2015; Bennet et al., 2019; Kademani et al., 2020). Institutions are critical in facilitating this transformation by helping communities shift from traditional, subsistence-based practices to more organized, market-oriented, and resilient livelihood systems (Manlosa, 2022). The role of institutions becomes especially important in areas where people have historically been excluded from mainstream development processes (Rout & Patnaik, 2014).

A clear example of this is seen in the Araku Valley of Andhra Pradesh, where tribal farmers have traditionally cultivated coffee using age-old methods. In recent years, the region has undergone a remarkable transformation, largely due to the involvement of multiple institutions working together to support local communities (Karki et al., 2016). Organizations like the Naandi Foundation, the Coffee Board, and several development NGOs have introduced new ideas, practices, and connections that have changed the way coffee is produced, marketed, and valued (Hogg & Joseph, 2013). These efforts have helped tribal farmers shift from growing coffee as a subsistence crop to producing high-quality organic coffee for national and international markets. Beyond the economic impact, institutional engagement has also brought social change (Upendranadh & Subbaiah, 2012). The formation of Self-Help Groups (SHGs), Farmer Producer Organizations (FPOs), and cooperatives has created new platforms for women and youth to take leadership roles and participate in decision-making (Shinogi et al., 2021). Skills training, financial literacy, and exposure to new markets have given many farmers greater confidence and control over their livelihoods. This kind of support has not only increased household incomes but also strengthened community bonds and local governance structures (Das et al., 2025). What makes the Araku experience especially valuable is the way different institutions have worked in coordination rather than isolation. When multiple organizations contribute their strengths in a complementary way, the impact is deeper and more lasting (Hogg & Joseph, 2013). This study aims to understand how such institutional engagement has influenced the livelihoods of tribal coffee farmers in Araku Valley. It identifies the presence, roles, and linkages of various institutions and how they have collectively contributed to changes in income, skills, empowerment, and overall well-being of the community.

METHODOLOGY

This study adopted an exploratory sequential research design to investigate the role of institutional engagement in the livelihood transformation of tribal coffee farmers. An exploratory sequential design is a mixed-methods approach that begins with qualitative data collection and analysis, followed by quantitative methods to build on initial findings. This design was appropriate as it allowed an in-depth exploration of institutional linkages, which was later validated through structured surveys. The research was conducted during 2024–2025 in Araku Valley block of Alluri Seetarama Raju District, Andhra Pradesh. Araku Valley was purposively selected due to its significance in tribal coffee cultivation and the active presence of institutional actors. To ensure representativeness, a random sampling method was used to select six villages that is Gondivalasa, Thudumu, Chinalabudu, Pakanakodi, Doravalasa, and Killoguda. From each village, 30 tribal coffee farmers were randomly chosen, resulting in a total sample size of 180 respondents. A multi-method approach was used for data collection. Primary data were collected through structured questionnaires covering variables such as institutional engagement, presence, perceived support, and linkage strength. The questionnaire was validated through expert review by agricultural extension professionals. Secondary data from journals, reports, and government sources were also reviewed to support and contextualize findings. Data analysis involved Social Network Analysis (SNA) to examine institutional linkage patterns among farmers and organizations. UCINET software was used to generate network maps and analyze key metrics (Kumari et al., 2024). Centrality indicators such as degree, betweenness, and closeness were computed to determine each institution's influence within the network. Degree centrality reflected direct connections, betweenness indicated intermediary roles, and closeness measured efficiency of access to others in the network. A heat map was developed to visually represent the intensity of institutional engagement across villages. Color gradients illustrated the variation in institutional presence and connectivity, offering clear insights into areas with stronger or weaker institutional ecosystems. These analytical tools enabled a comprehensive understanding of how institutional collaboration influences livelihood outcomes among tribal coffee farmers in Araku Valley.

RESULTS

SNA: Institutional engagement

The SNA (Figure 1) clearly showed that dense respondent clusters around each village node, Naandi Foundation as the central

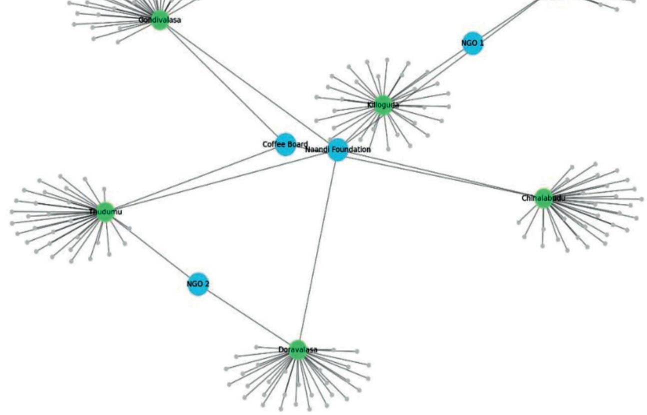

Figure 1. SNA: Institutional Engagement and its role in Livelihood Transformation

institutional hub, connected to all villages and other institutions, had a more selective village-level engagement, indicating the multi-tiered structure of support in livelihood transformation.

Institutional presence

Table 1 captured the presence and intensity of four key institutional actors, Naandi Foundation, Coffee Board and two simulated NGOsacross the six study villages in Araku Valley. It showed that while the Naandi Foundation was present in all six villages (with high engagement in most), the other institutions had a selective and targeted reach. Naandi Foundation played a central role in every village, especially in Pakanakodi, Doravalasa, and Thudumu, where their activities included training, direct procurement of beans, branding of Araku Coffee, and facilitating SHGs. The Coffee Board mainly operated in Gondivalasa, Thudumu, and Chinalabudu, focusing on extension services and subsidy linkage. NGO 1 had a focused presence in Pakanakodi and Killoguda, where they provided skills training and women empowerment programs. NGO 2 supported Doravalasa and Thudumu with health outreach and nutrition awareness programs. The last column quantified the number of active institutions per village. Thudumu stood out with engagement from three institutions, suggesting a more supportive ecosystem compared to Gondivalasa and Chinalabudu, where only two institutions were present.

Perceived impact of institutional engagement

Table 2, reflected respondent perceptions, likely gathered through FGDs or ranking exercises, about how institutional presence had affected different aspects of livelihood: Income and Market Linkage: Villages like Pakanakodi and Doravalasa reported high impacts due to organized marketing and premium pricing of Araku Coffee. This aligned with Naandi Foundation's strong intervention in these areas. Gender Empowerment: SHG involvement, training, and financial literacy programs led to a noticeable increase in women's participation in economic and household decisions, particularly in Killoguda, Doravalasa, and Pakanakodi. Skill Development: Focused training efforts by NGOs and the Coffee Board (in Thudumu and Chinalabudu) enhanced capabilities in post-harvest handling, organic farming, and enterprise development. Overall Livelihood Impact: Villages with diversified and sustained institutional engagement, namely Thudumu, Pakanakodi, and Doravalasa, showed the highest perceived transformation, indicating that institutional synergy played a vital role in holistic rural development.

Tables 1 and 2 summarized how institutional presence correlated with village-level transformations. Villages with higher institutional overlap (like Thudumu, Doravalasa, Pakanakodi) showed higher overall livelihood impact, particularly in gender empowerment and market access.

Table 1. Institutional Presence across villages

Village	Naandi Foundation	Coffee Board	NGO 1	NGO 2	No. of Institutions Present
Gondivalasa	√	√	×	×	2
Thudumu	√	√	×	√	3
Chinalabudu	√	√	×	×	2
Pakanakodi	√	×	√	×	2
Doravalasa	√	×	×	√	2
Killoguda	√	×	√	×	2

Institutional linkages

In SNA, centrality indicators were used to quantify the relative importance or influence of actors (institutions, in this study) within a network. The three key centrality measures used in this research are degree centrality, betweenness centrality and closeness centrality. Degree centrality refers to the number of direct connections an actor has with others in the network. A higher degree centrality indicates that the institution is more active or visible in the network, engaging with multiple actors directly. Betweenness centrality measures how often an actor lies on the shortest path between other actors. It reflects the institution's role as a bridge or intermediary, suggesting its potential control over the flow of information or resources between disconnected actors. Closeness centrality indicates how close an actor is to all other actors in the network based on the shortest paths. A higher closeness value suggests that the institution can quickly interact or disseminate information across the network, demonstrating accessibility and influence. These indicators collectively help identify which institutions are central, influential, or strategically positioned within the network, thereby informing the understanding of institutional engagement in livelihood transformation.

Table 3 showed that Thudumu ranked highest across all centrality indicators, making it the most influential node for institutional interactions. All villages showed strong linkage with Naandi Foundation, confirming its pivotal role in regional livelihood development. Villages that had three institutional linkages demonstrated higher centrality and stronger transformation outcomes, supporting the idea that multi-actor synergy enhanced developmental reach.

Figure 2 showed the heatmap of institutional impact on tribal livelihood transformation, an innovative visualization that illustrated

Table 2. Perceived Impact of Institutional Engagement on Livelihood Transformation (Village-wise)

Village	Perceived Impact on Income	Market Linkage	Gender Empowerment	Skill Development	Overall Livelihood Impact
Gondivalasa	Medium	Low	Medium	Low	Moderate
Thudumu	High	Medium	High	High	High
Chinalabudu	Medium	Medium	Medium	Medium	Moderate
Pakanakodi	High	High	High	High	High
Doravalasa	High	High	High	Medium	High
Killoguda	Medium	Medium	High	Medium	Moderate

Table 3. Summary of Centrality Scores and Institutional Linkages

Village	Degree Centrality	Betweenness Centrality	Closeness Centrality	No. of Institutions Linked	Institutional Partners
Thudumu	0.1746	0.2992	0.3810	3	Naandi Foundation, Coffee Board, NGO 2
Gondivalasa	0.1693	0.2946	0.3795	2	Naandi Foundation, Coffee Board
Pakanakodi	0.1693	0.2966	0.3795	2	Naandi Foundation, NGO 1
Killoguda	0.1693	0.2966	0.3795	2	Naandi Foundation, NGO 1
Chinalabudu	0.1693	0.2946	0.3795	2	Naandi Foundation, Coffee Board
Doravalasa	0.1596	0.2902	0.3779	2	Naandi Foundation, NGO 2

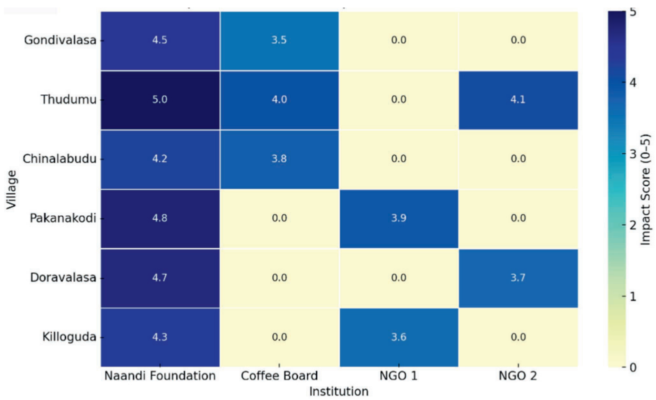

Figure 2. Heat map of Institutional Impact on Tribal Livelihood

the intensity of institutional impact across each village (darker shades = higher impact), Naandi Foundation's consistently high scores in all villages, the selective but targeted presence of Coffee Board, NGO 1, and NGO 2. This heatmap made it easier to compare institutional performance and coverage across multiple villages at a glance.

DISCUSSION

The Social Network Analysis (SNA) of the study indicated that the institutional landscape of the tribal coffee farming communities in the Araku Valley was highly clustered and interconnected. The results showed that institutions significantly influenced the directions of rural development, and the Naandi Foundation emerging as the most significant node in the network. It consistently scored highest across the three centrality metrics that is degree, closeness, and betweenness, highlighting its extensive involvement and critical role in bridging villages with other institutional actors. High levels of institutional connectivity in villages like Thudumu, Pakanakodi, and Doravalasa were associated with a positive impact on important aspects of livelihood like gender empowerment, income enhancement, market integration, and skill development. These findings were supported by Mehta et al., (2023) who found that institutional capital functions as a basic resource that communities use to obtain access to opportunities, resources, and knowledge. The findings were also consistent with the framework for sustainable livelihoods, which argues that access to institutional support strengthens the five primary livelihood assets: natural, financial, physical, social, and human (Natarajan et al., 2022). The study also align with Kademani et al., (2025) whereas, targeted interventions across different aspects of support, potentially leading to more efficient allocation of resources was advocated. The study's heatmaps and network visualizations further illustrated that villages with stronger institutional presence acted not merely as beneficiaries, but as bridging nodes within the system. These intermediary villages facilitated the diffusion of knowledge, innovations, and best practices both vertically and horizontally, increasing the effectiveness and equity of development interventions. This dynamic was particularly evident in Thudumu, which recorded the highest centrality scores and the most substantial improvements in livelihood outcomes. Notably, Thudumu was supported by three institutions. The Naandi Foundation's role was particularly multifaceted. Beyond its traditional function of aggregating coffee beans, the organization also acted as a value-chain enabler by providing training in sustainable agricultural practices, ensuring quality control, connecting farmers to premium markets, and supporting direct marketing channels for Araku Coffee. Assessments by KPMG (2018) and documentation from the Coffee Board of India (2017) corroborated these contributions, emphasizing Naandi's crucial role in converting subsistence farming into globally recognized organic coffee production. This multi-layered, cooperative institutional ecosystem effectively transformed tribal farmers from passive recipients to active participants in social and economic change. Through collaborative platforms, institutional partnerships, and information exchange, these actors worked together to improve socioeconomic resilience, foster community cohesion, and build local capacities. The Araku model demonstrated how strategic and inclusive institutional engagement could serve as a replicable model for sustainable rural development in underprivileged areas.

CONCLUSION

This study indicates that institutional engagement is crucial to improving the livelihoods of tribal coffee farmers in the Araku Valley. It illustrates how villages with greater levels of institutional connectivity see notable improvements in income, market access, skill development, and gender empowerment. The findings show that multi-institutional partnerships create a favorable atmosphere where local communities actively participate in their own development. The primary institution plays a crucial role in providing training, quality control, and access to global markets, all of which contribute to the sustainability of rural livelihoods. In addition to receiving various forms of financial assistance, villages with strong institutional ties can also function as knowledge centers in the region. The study confirms that integrated institutional networks are necessary for inclusive and sustainable rural development. These findings have important policy and practice implications and provide a replicable model for enhancing livelihood outcomes in other marginalized and tribal areas.

REFERENCES

Albore, A. (2018). Review on role and challenges of agricultural extension service on farm productivity in Ethiopia. *International Journal of Agricultural Education and Extension*, *4*(1), 93-100.

Bennett, N. J., Blythe, J., Cisneros-Montemayor, A. M., Singh, G. G., & Sumaila, U. R. (2019). Just transformations to sustainability. *Sustainability*, *11*(14), 3881.

Coffee Board of India. (2017). Annual Report 2016-17. Ministry of Commerce and Industry, Government of India.

Das, N., Modak, S., Prusty, A. K., Saha, P., & Suman, S. (2025). Understanding and overcoming key challenges of agripreneurs in Southern Odisha: a case study. *Indian Journal of Extension Education*, *61*(2), 118–122. https://doi.org/10.48165/ijee.2025.612rn05

Gajbhiye R., Nain, M. S., Singh P., & Chahal, V. P. (2015). Developing linkages for agricultural technology transfer: A case study of research institution and voluntary organization partnership. *Indian Journal of Agricultural Science, 85*(6), 838-844.

Hogg, D., & Joseph, D. (2013). Forging a Template for Sustainable Rural Development: The Araku Way. *Field Actions Science Reports. The Journal of Field Actions,* (Special Issue 7). http://journals.openedition.org/factsreports/2424

Kademani Sujay, B., Nain, M. S., Mishra, J. R., & Singh, R. (2020). Policy and institutional support for agri- entrepreneurship development in India: A Review. *Journal of Extension Systems*, *36*(1), 15-22. http://doi:10.48165/JES.2020.36104.

Kademani Sujay, B., Nain, M. S., Singh, R., Roy, S. K., Prabhakar, I., Ranjan, A., Karjigi, D. K., Patil, M., Das, D., & Wasaful Q.S. K. (2025). Quantifying support for agripreneurs: a multidimensional scale development and analysis of institutional mechanisms, *Journal of Global Entrepreneurship Research, 15*, 12. https://doi.org/10.1007/s40497-025-00429-4

Karki, S. K., Jena, P. R., & Grote, U. (2016). Fair Trade Certification and Livelihoods: A panel data analysis of coffee-growing households in India. *Agricultural and Resource Economics Review*, *45*(3), 436–458. https://doi.org/10.1017/age.2016.3

KPMG. (2018). Araku Coffee: Building a global brand through sustainable value chains. KPMG Case Study Report, Hyderabad.

Kumari, A., Deb, A., Prusty, A. K., Suman, S., Rout, D. S., & Amar, A. K. (2024). Preservation of the indigenous medicinal knowledge network of the Bonda Tribe. *Indian Journal of Extension Education*, *60*(4), 40-46. https://doi.org/10.48165/IJEE.2024.60408

Manlosa, A. O., Partelow, S., Jiren, T. S., Riechers, M., & Paramita, A. O. (2022). The role of institutions in food system transformations: lessons learned from transdisciplinary engagements in Ethiopia, the Philippines, and Indonesia. *Ecosystems and People*, *19*(1). https://doi.org/10.1080/26395916.2022.2146753

Mehta, G., Vaidya, M. K., & Sharma, P. (2023). Impact of institutional development programmes on rural livelihoods of north-western Himalayan State, India. *Indian Journal of Ecology, 50*(4), 1104-1109. http://dx.doi.org/10.55362/IJE/2023/4020

Natarajan, N., Newsham, A., Rigg, J., & Suhardiman, D. (2022). A sustainable livelihoods framework for the 21st century. *World Development*, *155*, 105898. https://doi.org/10.1016/j.worlddev.2022.105898

Rout, S., & Patnaik, P. (2014). Institutional exclusion and tribal interest: Decentralized government in the context of conflicts over development in India. *Journal of Developing Societies*, *30*(2), 115-143. doi:10.1177/0169796X14525532

Shetunyenga, N. N. T. (2024). The value of community participation in rural development. *Open Journal of Social Sciences*, *12*(8), 520–533. https://doi.org/10.4236/jss.2024.128031

Shinogi, K. C., Jayashree, K. M., Varghese, E., Srivastava, S., Rashmi, I., Balakrishnan, R., & Gills, R. (2021). Empowerment of smallholder women farmers through self-help groups in south-west India. *Indian Journal of Extension Education, 57*(2), 31-37. https://doi.org/10.48165/

Singh, A., Singh, R., Nain, M. S., Mishra, J. R., Kumar, P., Sharma, D. K., & Paul, R. K. (2023). Linkage network structures of farmers: Analysing FPOs of M.P. and Bihar in India. *Indian Journal of Extension Education*, *59*(3), 14-20. https://doi.org/10.48165/

Singh, R., Nain, M. S., Sharma, J. P., Mishra, J. R., & Burman, R. R. (2014). Institutional convergence of synergistic strengths for developing women agripreneurs. *Indian Journal of Extension Education, 50*(3&4), 1-7.

Upendranadh, C., & Subbaiah, C. (2012). Small growers and coffee marketing–issues and perspective from the field. NRRPD Discussion paper, 15.