Research Article

Indian Journal of Extension Education
Vol. 60, No. 4 (October–December), 2024, (83-89)

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

Empowering Women Agripreneurs through Government Livelihood Initiatives: A Case Study of Jharkhand, India

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HIGHLIGHTS

- Women agripreneurs in India contribute significantly in income generation, sustainable growth by self-sufficiency despite social challenges.
- There is significant transformative impact of government benefit programs on the economic status and entrepreneurial behaviour of women agripreneur
- An increase in multiple sectors like agriculture, livestock, fisheries and agribusiness has been observed by agripreneurs.

ARTICLE INFO

Keywords: Women agripreneur, Jharkhand, Benefit, Livelihood programs, Rural development, Gender equity.

https://doi.org/10.48165/IJEE.2024.60415

Conflict of Interest: None

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

ABSTRACT

The study evaluates the impacts of targeted interventions implemented by the Central and state government in Jharkhand, India. Being a part of Ph.D. thesis, 260 beneficiaries from 13 blocks in three districts of Jharkhand were selected, and data was conducted during the year 2023-24. Conclusions were derived using descriptive and inferential statistics. The research revealed that all respondents were beneficiaries of the National Rural Livelihood Mission (NRLM), followed by Jharkhand Opportunities for Harnessing Rural Growth (JOHAR) (92.7%) and Jharkhand Horticulture Intensification by Micro Drip Irrigation (JHIMDI) (14.2%). The investigation also identified a substantial increase in the ownership of assets such as poly houses, poultry sheds, and micro drip systems. Income, expenditure, and savings in these areas demonstrated statistical significance after association with the programs. Income in agriculture, livestock, fisheries, and agribusiness improved significantly after receiving benefits. Principal component analysis identified three principal components with Eigen values > 1.0, with a cumulative variance of 71.03. Four entrepreneurial behavior traits-Innovativeness, Risk-bearing ability, Self-confidence, and Planning Orientation-were highly influenced by Principal Component 1, explaining 29.6 per cent of the total variance.

INTRODUCTION

Women agripreneurs are vital contributors to India's agricultural sector, driving income generation, self-sufficiency, and sustainable growth (Singh et al., 2022). They actively participate in decision-making and challenge traditional norms (Farnworth et al., 2020). Despite various challenges, rural women entrepreneurs are increasingly successful, contributing to economic development and empowerment (Bansal & Kaur, 2019). Successful examples include group farming by women in Telangana and Kerala (Agarwal, 2020). Women play a crucial role in farm-related tasks, contributing more labor to the agricultural sector than men (Satyavathi et al., 2010). Women account for nearly 70 per cent of agricultural labor, highlighting their essential involvement in its progress (Chandrakar, 2020; Fatima et al., 2012). Participation in agricultural activities increases women's financial independence and aids in poverty reduction (Khoja, 2021).

Received 28-08-2024; Accepted 29-09-2024

The entrepreneurial endeavors of farmers in rural India are impeded by socio-economic and natural resource disparities, notwithstanding their valuable contributions, particularly those of lower socio-economic status, who struggle to access essential resources like irrigation water (Ranjan, 2018). Rural entrepreneurs encounter challenges such as financial constraints, limited access to education, and insufficient technical and management competencies (Prasad & Naveena, 2021). Agripreneurs encounter various constraints, including technical, marketing, financial, and managerial difficulties (Kaur & Kameswari, 2020; Sreedhar & Kanta, 2022).

Entrepreneurship education empowers rural women, fostering motivation, creativity, and self-sufficiency (Lashgarara et al., 2014; Bhardwaj, 2014). It bridges the gender gap and promotes economic growth and social inclusion (Cardella et al., 2020). Agripreneurs contribute to agricultural development, wealth creation, and improved living standards (Uplaonkar & Biradar, 2015). Entrepreneurial skills, strategies, and community involvement are crucial for agricultural entrepreneurship (Dias et al., 2019). Agripreneurship drives sustainable economic development in India, enhancing livelihoods and protecting the environment (Arumugam & Manida, 2023). Training and education are essential for women entrepreneurs, leading to empowerment and increased income (Masur et al., 2017; Saleem et al., 2022). Agripreneurship is supported through training programs, government cooperation, and educational initiatives (Singh & Misra, 2020; Mehra, 2019). Fostering a favorable attitude towards entrepreneurship among women empowers them to leverage government schemes and resources effectively (Meinam et al., 2023).

Research across Indian states reveal diverse challenges and contributions of agripreneurs. In Rajasthan, agripreneurs face funding, support, interest rate, and competition issues (Bairwa et al., 2015). In Haryana, effective leadership and strategic planning drive agribusiness success (Garima et al., 2023). Women agripreneurs in Coastal Odisha focus on crop production, while those in Western Tamil Nadu enhance social standing and contribute to the economy (Nayak et al., 2022; Dhanya et al., 2022). Despite progress, women agripreneurs in India remain underutilized and face challenges (Qadri et al., 2022). A study in Uttarakhand found barriers to entrepreneurship among women despite interest (Dutta et al., 2023). In Madhya Pradesh, women poultry farmers lack essential healthcare management skills (Patel et al., 2022). Socio-economic factors influence women's ability to diversify farming activities in Bihar (Singh et al., 2023).

METHODOLOGY

The study aimed to analyze the economic impact and efficacy of support programs for women entrepreneurs in specific regions of Jharkhand. Data was collected through a structured survey conducted through purposive stratified random sampling technique among women agripreneurs in three districts: West Singhbhum, Saraikela-Kharsawan, and Khunti. The study focused on the effectiveness of livelihood projects supported by the Government of Jharkhand (GoJ) and the World Bank across 13 selected blocks. A total sample size of 260 women (20 from each block) was strategically sampled to provide insights into the effectiveness of livelihood projects in empowering women agripreneurs and community cadre in Jharkhand.

Statistical tests were used to compare mean income levels before and after the women received benefits. The paired t-test was used to calculate test statistic at a 5% level of significance for (n-1) degree of freedom. Principal Component Analysis (PCA) was used to reduce multiple cases-by-variables data table down to fewer variables called principal components. Prior to conducting PCA, Kaiser-Meyer-Olkin (KMO) Test and Bartlett's test were applied. The KMO measure of sampling assesses the extent to which observed variables are influenced by underlying causes, with a KMO value greater than 0.5 being desirable. However, for present data, the KMO estimate is obtained as 0.632 indicating that the given data is suitable for PCA. The approximated chi-square of Bartlett's sphericity test was obtained 1008.507 with 36 degree of freedom and was significant at a 5% level of significance. The study rejects the null hypothesis and states that the observed variables are correlated and suitable for structure detection in the present study.

RESULTS

Association of women agripreneur with different livelihood programs

This study examines membership distribution across three livelihood programs in Jharkhand, India: Aajeevika (National Rural Livelihoods Mission), JOHAR (Jharkhand Opportunities for Harnessing Rural Growth), and JHIMDI (Jharkhand Horticulture Intensification by Micro Drip Irrigation Project). The results indicate significant variation in membership, suggesting different levels of reach and appeal among the programs. Table 1 presents membership data for three livelihood programs in Jharkhand. The Aajeevika program shows major participation with all selected 260 members, indicating its widespread acceptance and possibly effective outreach and implementation strategies. Also, the JOHAR program had a substantial membership of 241 (92.7%) but still leaves 19 (7.3%) non-participants, suggesting potential areas for outreach improvement or barriers to entry. The JHIMDI (Jharkhand Horticultural Intensification by Micro Drip Irrigation) program shows a stark contrast with only 37 members (14.2%), while a significant majority (85.7%) did not participate.

This disparity in membership could be attributed to various factors such as program awareness, perceived benefits, accessibility, and socio-economic barriers. Aajeevika's full membership may reflect its strong government support and effective mobilization strategies. JOHAR's moderate success indicates room for improvement in engagement and outreach.

Table 1. Association of women agripreneur with different livelihood programs

Livelihood Programs	Membership
Aajeevika (National Rural Livelihoods Mission)	260 (100.0%)
JOHAR (Jharkhand Opportunities for Harnessing Rural Growth)	241 (92.7%)
JHIMDI (Jharkhand Horticulture Intensification by Micro Drip Irrigation Project)	37 (14.2%)

JHIMDI's low participation highlights a need for investigating the underlying causes, which could include lack of awareness, inadequate infrastructure, or insufficient perceived benefits.

Asset owned by women agripreneur

Ownership of assets by the beneficiaries before and after the implementation of livelihood programs in Jharkhand is presented in Table 2. The increase in number of poly houses from 164 to 203 suggests that the programs have been effective in promoting this asset, which is crucial for protected cultivation and increasing crop yields. This aligns with the 100% membership in Aajeevika, indicating strong program support and effective resource allocation. The introduction of 21 Vermi Pits, where none existed before, highlights a significant impact of the programs, particularly JHIMDI, which focuses on horticulture and sustainable practices. This increase suggests that the programs are successful in introducing new sustainable agricultural practices.

Table 2. Status of assets owned by women agripreneur

Type of Assets	Assets owned by agripreneur	
	Before Membership (%)	After Membership (%)
Poly house	63.1	78.1
Vermi pit	0.0	8.1
Poultry shed	0.8	5.0
Micro irrigation	3.5	26.5

The rise of poultry sheds from 2 to 13 indicates a moderate uptake of this asset, likely supported by programs such as JOHAR, which aims to diversify rural livelihoods. The moderate increase suggests room for further improvement in promoting livestock-related assets. The substantial increase micro irrigation system from 9 to 69 underscores the programs' success in promoting efficient water use in agriculture. This increase is particularly relevant to JHIMDI's focus on micro drip irrigation, reflecting effective program implementation. The data demonstrate that the livelihood programs have positively impacted asset ownership, with varying degrees of success across different assets. The significant increase in poly houses and micro irrigation systems suggests strong program support and adoption of these technologies. The introduction of Vermi Pits indicates a successful introduction of new sustainable practices, while the moderate increase in poultry sheds points to potential areas for further promotion and support.

Economic development of women agripreneur through micro infrastructure

The mean level of income, expenditure, and savings of women agripreneur before and after the implementation of livelihood programs, along with t-statistic are presented in Table 3. Regarding poly nursery houses, the mean income of women agripreneur increased significantly from Rs. 47975.61 to Rs. 107452.44 reflecting the effectiveness of poly nursery houses in enhancing income. Similar kind of observations were found for expenditure and savings as well which suggests that there is a significant rise in spending likely due to higher operational costs associated with increased production and also significant improvement in savings, indicating substantial economic benefits from poly nursery houses. In case of poultry shed, it has been observed that there is a substantial rise in income level and savings of women agripreneur, however there is no significant increment has been found in expenditure level, demonstrating a significant improvement in economic stability for poultry shed owners. Income associated with micro irrigation systems showed a substantial increase from Rs. 17358.49 to Rs. 66641.51, indicating a highly significant enhancement in income. In addition, expenditure incurred and savings of women agripreneur under micro irrigation system also show significant increase after the implementation of livelihood programs.

The mean values indicate the average income, expenditure, and savings before and after the program implementation, providing a central measure of the economic impact. The t-statistic quantifies the magnitude of the difference in relation to the variability observed in the sample data. A large absolute value suggests a substantial change between the means before and after. The p-value assesses the statistical significance of the results. A p-value of 0.00 indicates that the observed differences are highly significant, rejecting the null hypothesis that there is no change due to the livelihood programs. There has been substantial impact on income of women agripreneur across multiple occupational sectors (Table 4). Before associating with programmes, mean income in agriculture, livestock, fishery, and agribusiness were notably lower compared to after benefits were received. Post-benefit income saw significant increase across

Table 3. Income, expenditure and savings women agripreneur in respect of micro infrastructure

Micro Infrastructure	Economic Development	Mean		t-statistic
		Before	After	
Poly nursery house	Income	47975.61	107452.44	28.843**
	Expenditure	15274.39	31042.68	35.112**
	Savings	32701.22	76409.76	25.198**
Poultry shed	Income	18257.01	24602.80	6.169**
	Expenditure	5981.31	6074.77	1.000**
	Savings	12275.70	18528.04	6.196**
Micro irrigation	Income	17358.49	66641.51	18.402**
	Expenditure	10377.36	42679.25	12.038**
	Savings	6981.13	23962.26	4.737**

** Significant at 1%

Table 4. Occupation-wise income level under specified livelihood initiatives

Occupation	Mean Income		t-statistic
	Before getting benefits	After getting benefits	
Agriculture	54741.83	76733.54	45.280**
Livestock	11360.34	18706.70	24.762**
Fishery	47593.75	77625.00	13.558**
Agribusiness	20416.67	50000.00	27.350**
Total	78629.16	147116.85	61.508**

** Significant at 1%

the board, exemplified by rise in agriculture income from Rs. 54741.83 to Rs. 76733.54, livestock from Rs. 11360.34 to Rs. 18706.70, fishery from Rs. 47593.75 to Rs. 77625.00, and agribusiness from Rs. 20416.67 to Rs. 50000.00

This statistical evidence denotes effectiveness of benefits in boosting income levels across varied occupational groups, which has profound implications for policy makers aiming to improve economic stability and reduce income disparities through targeted welfare programs. These findings offer strong evidence to justify the continuance and improvement of these benefit programs in order to promote wider economic success and social well-being.

Principal component analysis of entrepreneurial behavior traits

It is observed that nine entrepreneurial behavior traits (variables) considered in the present study which are innovativeness (IN), Decision making ability (DM), Risk-bearing ability (RB), Self-confidence (SC), Planning Orientation (PO), Market Orientation (MO), Initiation Skill (IS), Planning Skill (PS), and Execution Skill (ES); may be reduced into three principal components which explain around 71 percent variance of the original variables. Table 5 displays the eigenvalues, the percentage of variance explained, and the cumulative percentage of variance explained by the emerging principal components. The primary components have been selected based on their eigenvalues being greater than 1, as indicated by Table 5.

Table 6 displays the communalities of nine variables utilized in the study, which are explained by three principal components. Communality refers to the extent to which the variance of each variable can be accounted for by the major components that have been identified. The variable of Self-confidence shows highest percent of variance i.e. 85.2 percent followed by Decision making ability (81.8%) and Initiation Skill (81.6%). The study utilized Kaiser's Varimax Rotation method to derive the component matrix, which provides the structure of principal components. Loadings are the correlations between the variables and the principal

Table 6. Communalities and Component Matrix for entrepreneurial behavior traits among women agripreneur

Entrepreneurial Behavior	Commu-nalities	Rotated Principal Component		
		PC1	PC2	PC3
Innovativeness (IN)	0.778	0.878	-0.064	0.054
Decision Making Ability (DM)	0.818	-0.137	-0.037	0.893
Risk-bearing Ability (RB)	0.618	0.619	0.360	0.325
Self-confidence (SC)	0.852	0.912	-0.032	-0.138
Planning Orientation (PO)	0.739	0.653	-0.559	-0.021
Market Orientation (MO)	0.495	0.439	-0.180	0.520
Initiation Skill (IS)	0.816	0.126	0.892	-0.061
Planning Skill (PS)	0.633	0.084	-0.789	-0.057
Execution Skill (ES)	0.643	-0.131	0.698	-0.371

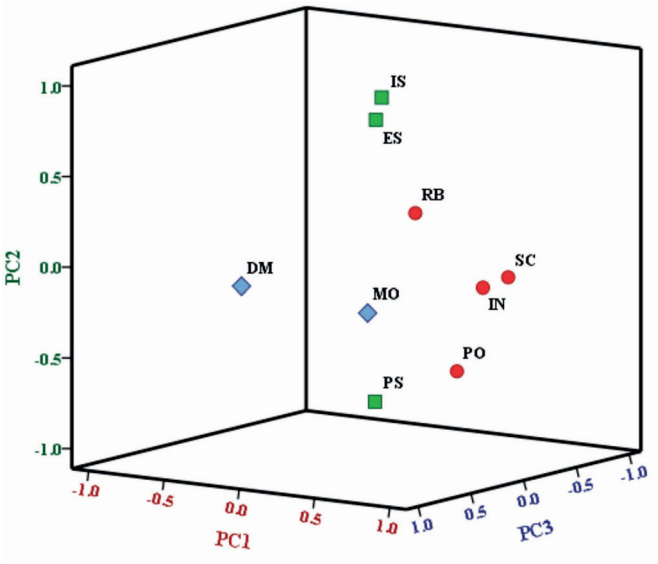

Figure 1. 3D Component Plot in Rotated Space

Table 5. Total Variance Explained by Principal Components

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.98	33.08	33.08	2.66	29.60	29.60
2	2.16	23.99	57.07	2.39	26.53	56.13
3	1.26	13.96	71.03	1.34	14.90	71.03
4	0.91	10.06	81.09			
5	0.62	6.83	87.93			
6	0.44	4.85	92.77			
7	0.26	2.88	95.65			
8	0.22	2.42	98.08			
9	0.17	1.92	100.00			

Extraction Method: PCA; Rotation Method: Varimax with Kaiser Normalization

component. Since, there are correlations; possible values vary between -1 to +1 as shown in Table 6.

Four entrepreneurial behavior traits namely Innovativeness (IN), Risk-bearing ability (RB), Self-confidence (SC), and Planning Orientation (PO) load highly on Principal Component 1 (PC1). This component can be described as the constituent element of Innovativeness. The first Principal Component accounts for 29.6 percent of the overall variance in the data set, thereby explaining its significance. The emerging second Principal Component (PC2) explains 26.53 percent of the total variance in the data set. It can be termed as "Leadership Skill" of women agripreneur because the variables which load highly on this component are Initiation Skill (IS), Planning Skill (PS) and Execution Skill (ES). The variables Decision making ability (DM) and Marketing Orientation (MO) load highly on third Principal Component (PC3). This component explains 14.9 percent of variance in the data set can be defined as "Decision making ability" component.

DISCUSSION

Jharkhand, with its rich natural resources and agricultural diversity, offers fertile ground for entrepreneurial endeavors. Key determinants of agricultural prosperity in the state include shifting towards cultivating high-value crops as a means of diversification, increased fertilizer use, capital formation, and road density (Pandey & Kumari, 2021). Growth can be further stimulated by enhancing irrigation, agricultural research, and infrastructure (Pandey & Suganthi, 2015). Women agripreneurs in Jharkhand play a crucial role in adopting new agricultural technologies, with a strong willingness to invest in labor-saving technologies (Joshi et al., 2019). Mechanization in agriculture has been found to disproportionately reduce women's farm labor (Afridi et al., 2022). Women in Jharkhand are increasingly venturing into agripreneurship across various segments of the agricultural value chain, often through self-help groups (Das, 2019). However, obstacles such as restricted availability of land, credit, technology, and market opportunities hinder their ability to expand operations (Jewitt, 2000). Government policies and support programs are essential for empowering these women and unlocking their full economic potential (Petare et al., 2016). Developing entrepreneurial competencies through training and group action can enhance farm profits and create agro-based employment opportunities (Singh et al., 2016).

The National Rural Livelihoods Mission (Aajeevika) and the JOHAR project in Jharkhand are key initiatives aimed at improving rural livelihoods through prospects for self-employment as well as skilled wage work. Participation in these income generation schemes significantly impacts women's social and economic empowerment (Jagadeeswari, 2015; Malyadri, 2020). The JOHAR project has successfully enhanced household income and productivity by promoting livestock value chains, with a focus on female beneficiaries (Leitch et al., 2020). It has also attracted unemployed rural youth to farming-based enterprises, improving their economic status and promoting an entrepreneurial spirit (Kumar et al., 2022; Ghosh et al., 2022). Based on these insights, a study was planned and conducted to evaluate the entrepreneurial behavior and economic impact of benefit programs on their beneficiaries. The findings also contribute academically by enriching the literature on gender, entrepreneurship, and rural development, advancing scholarly understanding and opening avenues for further research. The study emphasizes the importance of fostering environments where women can thrive as economic agents and catalysts for sustainable development in rural Jharkhand and beyond.

CONCLUSION

The study emphasizes the transformative impact of benefit programs on the economic status and entrepreneurial behaviour of women agripreneur in Jharkhand. All the respondents were found associated with Ajeevika which reflected in increased possession of assets like polyhouse, vermipit, poultry shed and micro irrigation system. There has been statistically significant increase in income, and savings earned from these infrastructures. Similarly, significant increase in multiple sectors like agriculture, livestock, fisheries and agribusiness has been observed. Principal component analysis revealed three principal components hovering around innovativeness, leadership skills and decision-making ability. The variables cumulatively explained the variability of 71.03 per cent. The study highlights the effectiveness of targeted interventions in enhancing the economic empowerment of women in rural areas. By providing access to resources such as financial support, technology, and market opportunities, these programs have enabled women agripreneur to expand their businesses, increase productivity, and contribute substantially to household incomes.

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