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Sanjana Bambale

Research Guide :

A.A.Jambhale

Empowering rural women through food processing: A study on the role of self-help groups (SHGs) in promoting food processing enterprises in Ahilyanagar and Pune districts

Sanjana Bambale¹

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ABSTRACT

Self-Help Groups (SHGs) have emerged as an important institutional mechanism for strengthening rural women's participation in livelihood activities, financial inclusion and entrepreneurship. Food processing is particularly relevant because it enables value addition to locally available agricultural and allied-sector products while creating opportunities for income generation and rural employment. The present study examines the role of SHGs in promoting food-processing enterprises among women in selected areas of Ahilyanagar and Pune districts of Maharashtra. The study assessed women's participation in enterprise activities, perceived economic and social outcomes, major operational and strategic constraints, and the association between government support and selected enterprise outcomes. A sample of 100 women was drawn from 20 SHGs, with 10 SHGs selected from each district and five active members selected from each SHG. Primary data were collected through a structured questionnaire and analysed using frequency and percentage, weighted mean scores, mean-score ranking, a paired-sample *t*-test and chi-square tests. The findings show strong participation in food-processing activities, SHG meetings and business decision-making. Average monthly income increased from ₹2,860 before joining the SHG to ₹7,455 after joining, an increase of ₹4,595 or 160.66%. The paired *t*-test indicated a statistically significant difference ($t = -30.4064$, $df = 99$, $p < .001$). Economic and social outcomes were also positive. Lack of finance was the most serious constraint, followed by difficulty in obtaining quality raw materials and marketing and promotion. Training and financial assistance/loans were significantly associated with reduction in financial burden, while subsidy was significantly associated with profitability. The study concludes that SHGs can provide an effective platform for women's economic and social empowerment through food processing, but sustainable enterprise development requires stronger finance, technical capacity, technology, procurement and market-linkage support.

Keywords: Self-Help Groups, Rural women, Women's empowerment, Food processing, Rural entrepreneurship, Value addition, Maharashtra, Ahilyanagar, Pune

Introduction

Rural women contribute substantially to household production, agricultural activities and traditional food-processing practices, but their contribution does not always translate into independent income, enterprise ownership or decision-making authority. Self-Help Groups (SHGs) offer a collective institutional platform through which women can mobilise savings, access credit, receive training, participate in collective decision-making and undertake livelihood activities. In the rural context, SHGs have expanded from savings-and-credit groups into broader platforms for financial inclusion, livelihood promotion, entrepreneurship development and women's empowerment.

Food processing provides an important pathway for converting agricultural commodities into higher-value products. Processing can improve the utility and marketability of raw materials, reduce wastage, extend shelf life and create alternative marketing channels. At micro and small scales, many processing activities can be undertaken by women using locally available resources and skills. Typical activities include cleaning, grading, sorting, milling, drying, preservation, cooking, fermentation, packaging, labelling and storage. SHG-based enterprises can therefore connect household-level food-processing skills with organised economic activity.

The relevance of food processing is particularly evident in Maharashtra because of the state's diversified agricultural production and access to large consumer markets. The source study identifies Ahilyanagar with milk-based products and Pune with tomato under the One District One Product (ODOP) framework associ-

Corresponding Author:

Sanjana Bambale

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A.A.Jambhale

ated with PMFME. These district-level opportunities provide a context in which women's collective processing, packaging and marketing activities can contribute to value addition and livelihood diversification.

Despite these opportunities, participation in an SHG-led enterprise does not automatically guarantee equal involvement or similar benefits for all members. Women may face constraints related to finance, raw materials, equipment, technical knowledge, packaging, marketing, transportation, competition and institutional support. Consequently, it is important to examine participation not merely as membership in an SHG, but as actual involvement in production, meetings, decision-making, packaging, marketing, financial decisions, training and enterprise improvement.

The present study addresses this issue by examining women SHG members engaged in food-processing enterprises in selected areas of Ahilyanagar and Pune districts. It focuses on four interconnected dimensions: women's participation in food-processing enterprise activities; perceived economic and social outcomes; constraints affecting enterprise development; and government or institutional support and its association with selected outcomes.

Review of literature

The literature reviewed in the source study indicates that SHGs can create opportunities for women's productive participation, enterprise development and empowerment. Agarwal *et al.* (2013) [1] examined empowerment of women SHG members through food processing and dairy management practices and reported that participation in processing activities provided opportunities for practical skill development and productive enterprise involvement. Mehta *et al.* (2013) [2] similarly highlighted the role of SHGs in encouraging women's participation in income-generating activities.

Kadu *et al.* (2013) [3], with reference to food processing and dairy management practices in Maharashtra, reported women's participation in preparation, storage and financial transactions. Such participation was associated with greater involvement in decision-making and practical skills, although procurement, marketing and some financial decisions were sometimes influenced by family members. This observation is relevant because enterprise participation can be strong in production while remaining comparatively weaker in market-facing or financial functions.

Patil and Yadav (2019) [4] found that SHG participation increased women's involvement in income-generating and collective activities and supported the development of entrepreneurial abilities. Kumar *et al.* (2020) [5] extended the understanding of SHG outcomes beyond income by highlighting household and nutrition-related dimensions. Ramesh *et al.* (2020) [6] reported improvements in income generation and livelihood opportunities, while Jadhav and Shinde (2021) [7] emphasised the institutional role of SHGs in enterprise management, production and income-generating activities.

The literature also identifies constraints that can limit the growth of women-led micro-enterprises. Hari Prabhu and Vinayagamurthy (2019) identified inadequate or delayed finance, weak market linkages and infrastructure as important challenges, while also emphasising branding, packaging, promotion, standards and technical training. Kadu *et al.* (2013) [3] highlighted technical knowledge, access to information and limitations in independent decision-making. These findings

suggest that enterprise growth requires support across finance, procurement, production, quality and marketing rather than a single intervention.

Studies reviewed in the source material further suggest that institutional programmes can strengthen economic participation when support is accessible and appropriate. Bajpai *et al.* (2020) [8] reported the relevance of government-sponsored programmes to women's economic participation and empowerment. Naik *et al.* (2023) [4] highlighted livelihood opportunities under State Rural Livelihoods Mission interventions, while Rao *et al.* (2024) [9] identified livelihood

diversification, financial inclusion, collective action and empowerment as important outcomes associated with SHG participation.

Overall, the reviewed literature suggests a positive relationship between SHG participation and women's economic and social empowerment. However, the source study identifies a need for enterprise-level evidence on the specific participation patterns, perceived outcomes, constraints and institutional support experienced by women engaged in food processing in the selected districts. The present research seeks to contribute such evidence.

Research objectives and hypotheses

The study was guided by four objectives:

- To assess the level of participation of women SHG members in various activities of food-processing enterprises in Ahilyanagar and Pune districts.
- To assess the perceived economic and social outcomes experienced by women through participation in SHG-led food-processing enterprises.
- To identify and rank the major constraints faced by women SHG members engaged in food-processing enterprises.
- To examine the government support received by women SHG members and its association with selected outcomes among women SHG members.

Two hypotheses were tested. H₀₁ stated that there is no significant difference between the average monthly income of women SHG members before and after participation in SHG-led food-processing enterprises; H₁₁ stated that a significant difference exists. H₀₂ stated that there is no significant association between government support received by women SHG members and selected outcomes of their food-processing activities; H₁₂ stated that a significant association exists.

Methodology

Research design and study area

The study adopted a descriptive and analytical research design. Ahilyanagar and Pune districts of Maharashtra were purposively selected because of the active presence of women SHGs engaged in food-processing enterprises and the relevance of agricultural and institutional support systems. The source study notes that Ahilyanagar has an important opportunity in milk-based processing, whereas Pune has an important tomato-processing context. Both districts therefore provide a suitable setting for examining women's enterprise participation, outcomes and constraints.

Sampling

The sampling frame consisted of active women SHGs engaged in food-processing enterprises in selected areas of the two districts. Ten SHGs from Ahilyanagar and ten from Pune were selected using simple random sampling from the eligible frame. Five active members from each selected SHG were then selected randomly. The final sample consisted of 20 SHGs and 100 women respondents, with 50 respondents from each district.

Item	Description
Study area	Selected areas of Ahilyanagar and Pune districts, Maharashtra
SHGs	20 total; 10 per district
Respondents	100 women; 5 per SHG
District allocation	50 respondents from Ahilyanagar and 50 from Pune

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Item	Description
District selection	Purposive
SHG selection	Simple random sampling
Member selection	Random selection of five active members per SHG

Data collection

Primary data were collected through a structured questionnaire/interview schedule. The instrument covered participation in enterprise activities, economic and social outcomes, operational and strategic challenges, government support, and income before and after joining the SHG. The perception items used a five-point Likert scale: Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2 and Strongly Disagree = 1. Secondary information was drawn from books, journals, research articles, reports and institutional sources identified in the original study.

Data analysis

Frequency and percentage analysis were used for descriptive interpretation. Weighted mean scores were used to assess participation and perception-based indicators. Mean-score ranking was used to rank constraints, with higher mean scores indicating more severe con-

straints. A paired-sample *t*-test compared income before and after SHG participation for the same 100 respondents. Chi-square tests were used to examine associations between selected forms of government support and selected outcomes. MS Excel was used for data entry, coding, tabulation and analysis.

Ethical considerations

The source study states that participation was voluntary, respondent information was kept confidential and data were used solely for academic and research purposes.

Results and discussion

Participation in food-processing enterprise activities

Women respondents reported a high level of participation across several enterprise activities. The strongest participation was in the core processing activity itself, followed by attendance at SHG meetings and participation in production and business decision-making. Packaging and labelling and marketing and selling also recorded positive levels of involvement. These results indicate that the SHG platform was not limited to financial or savings functions; it provided a setting in which women actively participated in operational aspects of food-processing enterprises.

The high score of 4.84 for active food-processing participation suggests that production was

Participation indicator	Weighted mean	Interpretation
Active participation in food processing	4.84	Very high
Regular attendance at SHG enterprise meetings	4.60	High
Participation in production/business decision- making	4.46	High
Participation in packaging and labelling	4.23	High
Participation in marketing and selling	4.00	High

the most established area of women's engagement. Participation in meetings (4.60) and decision-making (4.46) indicates that collective organisation was also functioning as a mechanism for business coordination. The lower, though still positive, marketing score of 4.00 suggests that market-facing activities may require greater strengthening. This interpretation is consistent with the literature reviewed in the source study, particularly the observation that women may be more directly involved in production than in procurement, marketing and selected financial decisions.

Economic outcomes

Economic outcomes were assessed through perceived indicators and by comparing average monthly income before and after joining the SHG. The results show a substantial increase in income after participation.

Economic indicator	Mean score
Joining the SHG has increased my personal income	4.51
SHG activities have improved my family's economic condition	4.29
Food processing has created regular employment opportunities	4.10

Economic indicator	Mean score
My savings have increased after joining the SHG	3.70
SHG participation has improved my financial independence	3.55

Personal income recorded the highest economic-impact mean score (4.51), followed by improvement in family economic condition (4.29) and creation of regular employment opportunities (4.10). Savings (3.70) and financial independence (3.55) were comparatively lower. The pattern indicates that income generation was the most immediate perceived economic benefit, while deeper financial independence may require longer-term accumulation of savings, assets, financial literacy and independent decision-making.

Change in average monthly income and hypothesis 1

Measure	Before SHG	After SHG	Change
Average monthly income	₹2,860	₹7,455	₹4,595
Percentage change	—	—	160.66%

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The average monthly income increased from ₹2,860 before joining the SHG to ₹7,455 after joining the SHG, an increase of ₹4,595 or 160.66%. The paired-sample *t*-test was based on 100 paired observations. The Pearson correlation between the paired observations was 0.481252; degrees of freedom were 99; the calculated *t*-statistic was -30.4064; and the two-tailed *p*-value was 5.11×10^{-52} . Since the *p*-value is far below the 0.05 significance level, the null hypothesis of no difference was rejected.

Statistic	Value
Paired observations	100
df	99
Pearson correlation	0.481252
<i>t</i> -statistic	-30.4064
Two-tailed <i>p</i> -value	5.11×10^{-52}
Decision	Reject H ₀

The statistical result demonstrates a significant difference between reported income before and after joining the SHG. The study therefore finds strong empirical evidence of an income improvement associated with SHG participation and food-processing engagement. However, because the research design is not an experimental or randomised longitudinal design, the result should be interpreted as an association observed among the respondents rather than as definitive proof that SHG participation alone caused the entire income increase.

Social outcomes

Social indicator	Mean score
Initiative in community activities	4.14
Communication and interpersonal skills	4.02
Leadership skills	3.94
Social status and recognition	3.91
Confidence level	3.80

Participation in household decision-making 3.72

Community participation recorded the highest social-impact mean score (4.14), followed by communication and interpersonal skills (4.02), leadership (3.94) and social recognition (3.91). Confidence (3.80) and household decision-making (3.72) were comparatively lower but remained positive. These results suggest that SHGs may contribute to empowerment through social interaction and collective activity as well as through income generation. The comparatively lower household decision-making score also indicates that economic participation does not necessarily translate immediately into equal authority within the household.

Support–outcome relationship	χ^2	<i>p</i> -value	Decision at 5%
Training ↔ reduction in financial burden	7.574	0.006	Significant
Financial assistance/loan ↔ reduction in financial burden	10.845	0.001	Significant
Subsidy ↔ profitability	6.368	0.012	Significant
Remaining tested relationships	—	> 0.05	Not significant

Constraints faced by women SHG food-processing enterprises

The study ranked operational and strategic constraints using mean scores. A higher score represents a more severe challenge.

Rank	Constraint	Mean score
1	Lack of finance	4.52
2	Difficulty in obtaining quality raw materials	4.33
3	Marketing and promotion	4.22
4	Maintaining quality standards	4.00
5	Lack of technical knowledge	3.97
6	Lack of modern equipment	3.92
7	Competition from branded products	3.86
8	Transportation and logistics	3.78
9	Packaging and branding facilities	2.52

Lack of finance emerged as the most severe constraint (4.52). This indicates that access to adequate and timely working capital remains a central requirement for enterprise continuity and growth. Difficulty in obtaining quality raw materials ranked second (4.33), highlighting the importance of reliable procurement systems and quality consistency. Marketing and promotion ranked third (4.22), showing that production capability alone may not ensure sales growth. Quality standards, technical knowledge and modern equipment were also important concerns. Packaging and branding facilities had the lowest mean score (2.52) among the listed constraints, although they remain relevant to product presentation and market competitiveness.

The ranking broadly corresponds with the reviewed literature, which identifies finance, infrastructure, market linkages, technical training and product presentation as recurring barriers to women-led micro-enterprises. The results imply that enterprise support should address the complete value chain—from procurement and processing to quality control, packaging and market access.

Government support and selected outcomes

The fourth objective examined whether selected forms of government support were associated with selected enterprise outcomes. Chi-square analysis showed that the relationship varied by the type of support and the outcome considered.

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Training showed a significant association with reduction in financial burden ($\chi^2 = 7.574$, $p = 0.006$). Financial assistance or loans also showed a significant association with reduction in financial burden ($\chi^2 = 10.845$, $p = 0.001$). Subsidy showed a significant association with profitability ($\chi^2 = 6.368$, $p = 0.012$). The remaining tested relationships were not statistically significant at the 5% level. Thus, Hypothesis II received partial support: significant associations existed for selected support-outcome combinations, but not for every tested relationship.

The pattern is important for policy because it suggests that government support is not a uniform input with identical effects across all enterprise outcomes. Training may strengthen capabilities that help women manage processing and enterprise costs, while financial assistance directly addresses liquidity and investment constraints. Subsidies may reduce the cost burden of enterprise development and thereby be reflected in profitability. At the same time, the non-significant relationships indicate that access to a programme by itself may not guarantee improvements in every dimension of enterprise performance.

Discussion

The combined findings indicate that SHGs function as both economic and social institutions for women engaged in food processing. High participation in processing, meetings and decision-making demonstrates that the enterprise model creates opportunities for women to engage in productive and collective activities. The income results strengthen this interpretation: the average monthly income of respondents was considerably higher after joining the SHG, and the paired comparison was statistically significant.

The social findings reinforce the broader concept of empowerment used in the study. Empowerment is not treated solely as income generation but also includes confidence, leadership, communication, social recognition, household decision-making and community participation. The relatively high scores for community participation and communication suggest that group-based enterprise activity can expand women's interaction beyond the household. However, the lower household decision-making score indicates that changes in social and economic participation may occur unevenly across different dimensions of empowerment.

The constraint results reveal a central challenge: participation can be high while enterprise expansion remains constrained. Finance, raw-material quality and marketing are the three most serious reported barriers. This suggests that policies focused only on forming SHGs or providing training may be insufficient unless women can obtain affordable finance, procure quality inputs and reach consumers. Similarly, technical knowledge and modern equipment matter for productivity and quality, while competition from branded products makes differentiation and market positioning increasingly important.

The government-support findings provide further nuance. The significant associations for training, financial assistance/loans and subsidy show that institutional interventions can be connected with selected enterprise outcomes. Yet the absence of significance in other tested relationships indicates that support must be matched to specific enterprise needs. A coordinated package combining finance, technical capacity, quality management, technology and market linkage is therefore more consistent with the evidence than reliance on a single support measure.

Major findings

- Women respondents demonstrated strong participation in SHG-led food-processing activities, with active processing participation recording the highest weighted mean of 4.84.
- Participation in SHG meetings (4.60) and production/business decision-making (4.46) was also high.
- Packaging and labelling (4.23) and marketing and selling (4.00) showed positive participation, indicating engagement beyond production.

- Average monthly income increased from ₹2,860 before joining the SHG to ₹7,455 after joining, an increase of ₹4,595 or 160.66%.
- The paired-sample *t*-test showed a statistically significant income difference ($t = -30.4064$, $df = 99$, $p < .001$).
- Personal income was the strongest perceived economic outcome (4.51), followed by family economic improvement (4.29) and regular employment opportunities (4.10).
- Community participation was the strongest social outcome (4.14), followed by communication/interpersonal skills (4.02) and leadership (3.94).
- Lack of finance was the most severe constraint (4.52), followed by quality raw materials (4.33) and marketing/promotion (4.22).
- Training was significantly associated with reduction in financial burden ($p = 0.006$), and financial assistance/loans were significantly associated with reduction in financial burden ($p = 0.001$).
- Subsidy was significantly associated with profitability ($p = 0.012$), while the remaining tested associations were not significant at the 5% level.

Conclusion

The study concludes that Self-Help Groups provide an important institutional platform for rural women's participation in food-processing enterprises in the selected areas of Ahilyanagar and Pune districts. Women demonstrated strong engagement in production, SHG meetings and business decision-making, suggesting that collective organisation can translate into meaningful enterprise participation.

The most notable economic result was the increase in average monthly income from ₹2,860 to ₹7,455 after joining the SHG. The statistically significant paired-sample *t*-test supports the conclusion that the reported income levels differed significantly between the two periods. In

addition to income, respondents perceived positive changes in family economic condition, employment opportunities, community participation, communication, leadership and social recognition.

At the same time, enterprise sustainability is constrained by finance, quality raw materials and marketing. The evidence therefore points toward a shift from basic group formation toward enterprise strengthening. Women-led food-processing enterprises require timely working capital, reliable input procurement, appropriate technology, technical and quality-management skills, branding and stronger access to markets. Government and institutional support appears useful in selected areas, particularly where training, financial assistance and subsidies address concrete enterprise needs.

Overall, SHG-led food processing has considerable potential to contribute to rural women's economic and social empowerment. The evidence from the selected districts supports the view that stronger financial, technical, technological and market institutions can help women convert existing processing skills and collective participation into more sustainable enterprises.

Policy implications and recommendations

- Government agencies should ensure timely financial assistance, suitable credit and subsidy access for women-led SHG food-processing enterprises.
- Training programmes should combine processing skills with quality control, food safety, equipment operation, costing, book-keeping and enterprise management.
- SHGs should strengthen collective procurement of quality raw materials to reduce input uncertainty and improve consistency.
- Market-linkage support should include local and institutional markets, exhibitions, buyer linkages and appropriate digital marketing channels.

- Women entrepreneurs should be encouraged to participate more actively in finance, marketing and business decision-making, not only production.
- Banks and financial institutions should simplify credit procedures and provide guidance suited to small SHG enterprises.
- Training institutions and development organisations should support packaging, branding, product differentiation and quality standards.
- Future enterprise support can promote cluster-based procurement, shared equipment and collective marketing where locally feasible.
- Future research should include larger samples and more districts and examine digital marketing, food safety, modern technology, branding, value addition and long-term enterprise performance.

Limitations of the study

- The study is geographically restricted to selected areas of Ahilyanagar and Pune districts; therefore, findings should not be generalised to all women SHGs in Maharashtra or India.
- The sample comprises 20 SHGs and 100 respondents. A larger sample could provide wider representation.
- The study relies substantially on interview and self-reported information, so recall, estimation and response biases may occur.
- Data were collected during a specific period and may not fully capture seasonal changes in raw-material availability, prices, production and demand.
- The study focuses on women SHGs engaged in food processing and does not cover SHGs whose primary activities are unrelated enterprises.
- The research does not provide a detailed technical evaluation of advanced machinery, laboratory testing, industrial-scale production or sophisticated processing technologies.
- Government scheme guidelines can change over time; scheme-related interpretation should therefore be linked to the period and official information used in the original study.

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