



STRENGTHENING SUSTAINABLE AGRICULTURE AND FOOD SUPPLY CHAINS THROUGH WOMEN ENTREPRENEURSHIP IN FOOD PROCESSING

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ABSTRACT

Women entrepreneurship has become a major contributor to the development of the economy, rural development and sustainable agricultural transformation. Women entrepreneurs in the food processing industry contribute significantly to the value addition of agricultural products, minimize post-harvest loss of food products, enhance the food quality, create employment, and boost local and regional food value chains. Although women entrepreneurs are becoming more involved, they are still suffering from many constraints, such as inadequate financial resources, lack of modern technology, information on markets, infrastructure, training in entrepreneurship, lack of institutional support etc which are limiting their progress and sustainability. Along with this, this paper looks into the role of women entrepreneur in enhancing food processing activities for strengthening sustainable agriculture and food supply chain. The study is conceptual in nature, and is based on literature review of the related concepts of women entrepreneurship, food processing, sustainable agriculture, agricultural value chain, food supply chain management, rural entrepreneurship and government support programmes. A conceptual framework is suggested in this paper, where women entrepreneurship is the independent variable, food processing activities are the Mediating variable and food supply chain and sustainable agriculture are the Dependent variable. The paper emphasizes on the role of Women Entrepreneurs in value addition, food preservation, product enhancement, efficient marketing and sustainable value chain development in food processing sector. It also highlights some of the main challenges and recommends strategic and policy measures for improving women's involvement in the food processing industry. The results indicate that enhancing financial inclusion, technology adoption, entrepreneur development and the institutional framework, as well as improving infrastructure, can have a big impact on the resilience and sustainability of agricultural and food value chains. Overall, the study aligns with the current debate on inclusive agricultural development and offers concrete policy recommendations to support women entrepreneurship for sustainable and resilient food systems from a policy, research and practice point of view.

KEYWORDS: Women Entrepreneurship, Food Processing, Sustainable Agriculture, Food Supply Chains, Agricultural Value Chains, Rural Development, Sustainability.

INTRODUCTION

Agriculture is the bedrock of Indian economy contributing to the employment of a large section of its population and national food security. In the era of escalating demand for safe, nutritious and value-added foods, the food processing industry has become a significant industry to boost the agriculture production and reduce the loss of post-harvest. Food processing adds value to raw agricultural commodities, helps to increase shelf life and creates jobs and economic development. Sustainable agriculture and resilient food supply chains have become a national and international priority in the context of national and international challenges, such as climate change, the disruption and changes in the food supply chain, and the changing preferences of consumers.

Women entrepreneurs are emerging as important stakeholders in the food processing sector with establishment of micro, small and medium scale food processing units with a variety of food products. They are engaged in activities such as food processing, packing, value addition and marketing which will enhance the agricultural value chains and thus increase the income generation of the rural households. Women entrepreneurs also help in the use of local agricultural resources, minimising food waste and promoting sustainable production.

While women entrepreneurs are still having challenges of access to finance, technology, infrastructure, market and business development, it is significant to note that they are making more contributions. To make women entrepreneurs more active in sustainable agriculture and food supply chains, it is crucial to tackle these challenges. This paper talks about the importance of women entrepreneur in food processing and their hurdles to improve sustainable agriculture and resilient food chain by women entrepreneurship.



BACKGROUND OF THE STUDY

Food processing industry is one of the most rapidly growing economic industries and plays an important role in bridging the gap between the agriculture and consumers. The agricultural sector processes food into value added products, thereby reducing post-harvest losses, improving income of farmers, providing jobs and augmenting food supply throughout the year. Sustainable food processing also contributes to efficient use of resources, waste minimisation and environmentally conscious food processing.

Women have always been an integral part of agricultural production and food preparation, especially in the rural areas. In the last several years, numerous women have converted these traditional crafts into business enterprises, setting up Food Processing units to produce spices, pickles, snacks, dairy products, bakery products, millet products, and organic products. These businesses play an important role in the economic development of the area and in the sustainability of farming.

Women have been encouraged to be a part of the food processing industry by the government initiatives like Pradhan Mantri Formalisation of Micro Food Processing Enterprises (PMFME) Scheme, Startup India, Stand-Up India and support through Self-Help Groups (SHGs). However, a significant number of women entrepreneurs still suffer from problems in access to finance, high-tech, quality certification, logistic and organized markets. Enhancement of institutional support and integration of the women entrepreneurs into the supply chain is, therefore, necessary to further its potential in sustainable agriculture and food supply chains.

PROBLEM STATEMENT

The food processing sector has a tremendous potential for improving the agricultural productivity, food losses and a better solution to food supply chains. They have a growing and growing involvement of women entrepreneurs in the area of value addition, innovation and development of local enterprises. But their involvement is still limited due to their lack of financial resources, modern technology, infrastructure, skilled training, market information, digital platforms and efficient logistics. Women-led businesses have limited growth and competitiveness due to poor integration into agricultural value chains.

Thus, women entrepreneurs' capacities to contribute to sustainable agriculture, food security, rural employment and economic development are not optimally realised. Therefore, the assessment of the role of women entrepreneurship in food processing sector for sustainable agriculture and food supply chain is important and measures and policy interventions for inclusive and sustainable growth are necessary for sustaining the growth.

OBJECTIVES OF THE STUDY

1. To understand the contribution of women entrepreneur in food processing industry.
2. To know the problems confronting women entrepreneurs in building sustainable agriculture and food supply chains.
3. To study the role of women entrepreneurs in food processing sector and its contribution to the sustainable development of agriculture.
4. To suggest measures for empowerment of sustainable agriculture and food supply chain by women entrepreneurship.
5. To recommend policy interventions for the support of women entrepreneurship in food processing sector and sustainable food systems.

LITERATURE REVIEW

Belz and Binder (2017) investigated the process of sustainable entrepreneurship and conceptualised it as an approach that integrates economic, social, and environmental objectives. Their study highlighted the importance of sustainable business opportunities, funding mechanisms, customer benefits, and market positioning in the development of sustainable enterprises. The authors also recognised that establishing sustainable market niches may require considerable time and effort, potentially increasing business risks. These findings are relevant to women entrepreneurs in food processing, who may need financial resources, institutional assistance, and market development support to adopt sustainable production and distribution practices.

Cabrera and Mauricio (2017) examined the factors influencing female entrepreneurial success at different stages of the entrepreneurial process. Their review organised these factors into individual, micro, meso, and macro environmental levels. Human capital, education, and experience were identified as important individual-level factors, while access to resources influenced opportunity recognition, resource acquisition, and entrepreneurial performance. The study also emphasised the influence of family circumstances, social expectations, cultural norms, and institutional structures on women's entrepreneurial activities. These findings provide a useful basis for investigating how individual capabilities and external constraints affect women entrepreneurs' performance in the food-processing sector.

Nosratabadi et al. (2020) examined the contribution of business model innovation to the development of novel food supply chains through a systematic literature review. The findings identified innovations in value proposition, value creation, and value delivery as key strategies for improving food supply chain performance. The authors highlighted the importance of developing adaptable business models that respond to environmental changes and improve operational performance. This study provides a theoretical foundation for understanding how women entrepreneurs in food processing can strengthen value addition, market access, and sustainable supply chain operations.



Lüdeke-Freund (2020) developed a theoretical perspective on business models for sustainability innovation, emphasising the relationship between entrepreneurial decisions, sustainable business models, and the wider sociotechnical environment. The framework considers how environmental conditions, stakeholder expectations, and institutional barriers influence the development and implementation of sustainability-oriented business models. This contribution is relevant to understanding how women entrepreneurs can integrate sustainable practices into food processing while responding to technological, institutional, and market-related challenges.

Aggarwal and Johal (2021) reviewed the development of research on women's entrepreneurship and identified a growing academic interest in this field over the preceding decade. Their findings indicated that existing studies had primarily focused on the determinants of entrepreneurship, gender-related issues, and the role of government schemes in promoting entrepreneurial activities. The authors also identified entrepreneurial education, microcredit, and information technology as areas requiring further investigation, particularly in rural women's entrepreneurship. Their study highlights the need to examine how financial access, skill development, and digital technologies can strengthen women-led food-processing enterprises and their contribution to sustainable supply chains.

Barrachina-Fernández et al. (2021) explored the relationship between female entrepreneurship and sustainability through a review of 28 studies indexed in the Web of Science database. Their findings emphasised the relevance of women's sustainability awareness in the establishment and development of new businesses. The study suggests that women entrepreneurs can contribute to sustainable development by incorporating environmental and social considerations into their business decisions. This perspective is relevant to the present study, which examines the role of women's entrepreneurship in promoting sustainable food-processing practices and strengthening agricultural and food supply chains.

Gupta et al. (2021) discussed the conceptual and policy-related challenges associated with sustainable agriculture and food security. Their study emphasised the need for greater clarity in the use of sustainability-related concepts and recommended broadening policy priorities from food security towards nutrition security and overall agricultural productivity. The authors highlighted the importance of sustainable agriculture in addressing India's nutritional needs under changing climatic conditions. This perspective supports the need to examine food-processing entrepreneurship as a potential link between agricultural production, value addition, resource efficiency, and the development of more sustainable food supply chains.

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Anggraeni (2022) proposed a conceptual model for strengthening local food systems through shorter and better-coordinated supply chains, improved product quality, value addition, stakeholder collaboration, and fair-trade practices. The study also emphasised that effective coordination, farmer training, and quality inspection can help reduce food loss and improve farmers' welfare and competitiveness.

Jararweh et al. (2023) highlighted the role of Internet of Things (IoT) technologies in smart and sustainable agriculture, emphasising their potential to improve agricultural productivity, support intelligent decision-making, reduce manual intervention, and contribute to global food security. Similarly, Dalal et al. (2024) demonstrated the potential of hybrid deep-learning models combining Convolutional Neural Networks (CNNs) and Bidirectional Long Short-Term Memory (BiLSTM) networks to improve supply chain prediction and decision-making, thereby supporting operational efficiency and sustainability. Collectively, these studies highlight the importance of technological innovation, supply chain coordination, and quality management in developing sustainable agricultural and food supply chains.

Hindocha and Dudhagara (2025) investigated growth trends and the major certifications and standards associated with food safety and quality in the food-processing industry. Their study highlighted the economic importance and untapped potential of the Indian food-processing sector, while emphasising the need for rigorous food safety and quality management practices. The authors noted

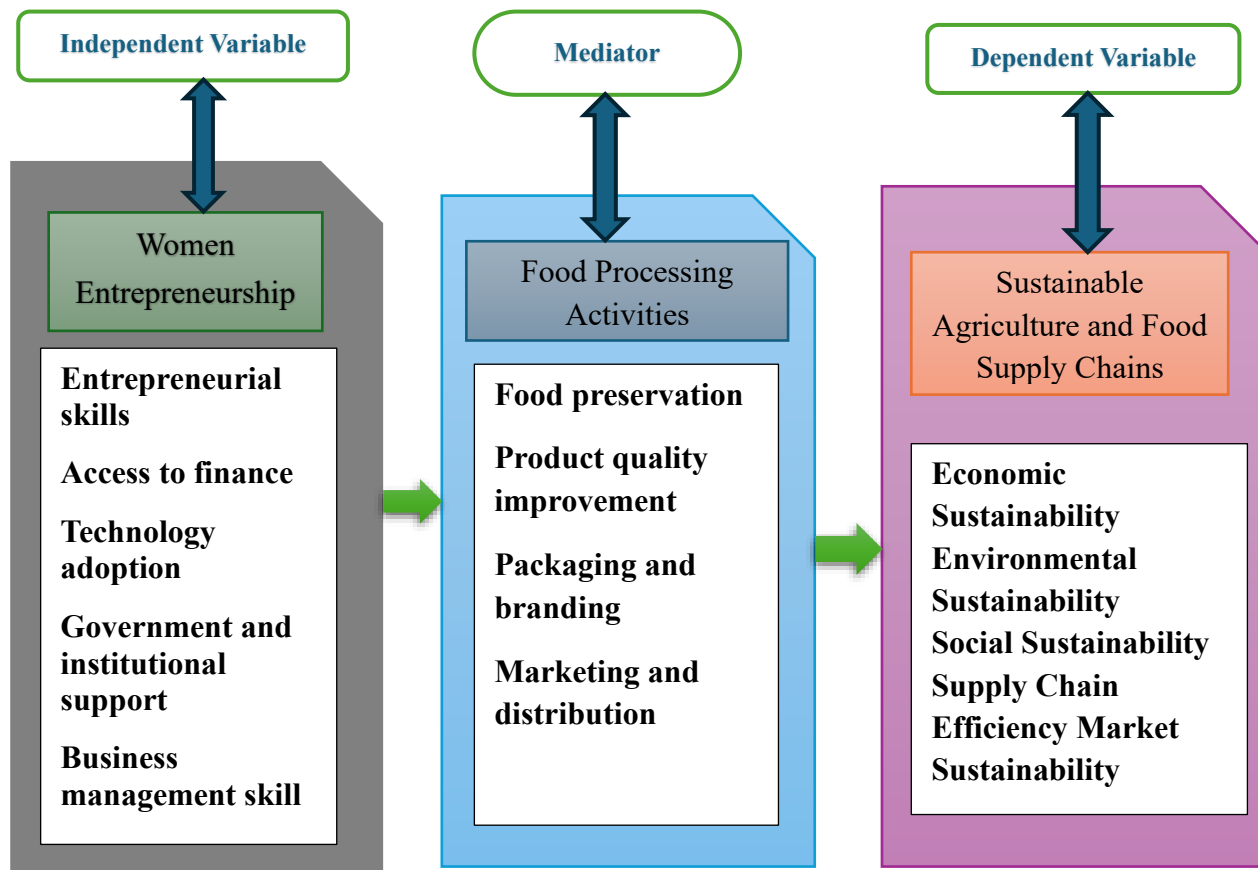
that compliance with appropriate standards can protect consumer health and improve product acceptance in international markets. These findings underscore the importance of quality assurance, appropriate technology, packaging, and regulatory compliance in enabling women-led food-processing enterprises to access wider markets and participate effectively in sustainable food supply chains.

RESEARCH GAP

The previous studies have shown that women entrepreneurs play an important role in the food processing, agricultural value addition, rural employment and sustainable economic development. The majority of the previous studies conducted are focused on the subject of women entrepreneurship, food processing, agricultural sustainability and government support as an independent study.

But there is little research that has been conducted on the contribution of women entrepreneurship towards sustainable agriculture and food chain in one single package in a sustainable manner, especially in India. Moreover, few studies have investigated the intermediary mechanisms between women entrepreneurship and sustainable agricultural and supply chain outcomes, e.g. food processing activities. This study fills these gaps by proposing a conceptual framework that will shed light on the linkages between women entrepreneurship, food processing and sustainable agriculture and food supply chains and inform policy, research and practice.

CONCEPTUAL FRAMEWORK



Women Entrepreneurship

In India, women entrepreneurship has emerged as an important player in economic development, employment generation, innovation and improving the livelihood of the household. Recent findings reveal that various challenges for women entrepreneurs are still continuing, such as access to finance, lack of managerial skills, lack of digital skills, family responsibilities, social and cultural constraints, lack of market opportunities and lack of institutional support (Ranguwal & Kaur, 2022; Aggrawal et al., 2022). Nupur and Shunmuga Sundaram (2022) highlighted that social, institutional, cultural, resource, environmental and psychological factors are important determinants of women's entrepreneurial involvement. Raj and Garlapati (2023) emphasized the role of financial literacy, digital literacy, policies and entrepreneurial ecosystem in the empowerment of women's businesses. Additional constraints were found to be financial, knowledge, family-support, and management-related constraints by Gupta and Mishra (2023). The role of Women Entrepreneurs in MSMEs sector has been gaining momentum in India with recent policy initiatives and participation of women. In summary, enhancing access to finance, skills, technology, markets and institutional support is crucial for women entrepreneurs' development and inclusive economic growth in India.



The Food Processing Sector

The food processing industry is a major link between agriculture and markets in India by transforming agriculture produce into value added food products. It helps in minimizing post-harvest losses, increasing the shelf life, creation of job opportunities and enhance market opportunities for farmers. The Ministry of Food Processing Industries (2024) stated that the sector helps in contributing farm income, employment, preservation infrastructure and the Ministry of Food Processing Industries (2025) noted that the gross value added and employment of the sector are increasing. Additionally, food processing offers women entrepreneurs avenues of business in dairy, fruit and vegetable processing, bakery products and traditional foods, spices and value-added products. But financial, entrepreneurial skill, technological adoption, infrastructure, market access, and institutional constraints could be barriers for women entrepreneurs. Hence, the present research deals with study of the role of these aspects of women entrepreneurship in the food-processing enterprise and for the development of sustainable food supply chains and agriculture. The focus is on the creation of women entrepreneurship development and value addition, job creation, efficiency and sustainability of the value chain.

Sustainable Agriculture

Sustainable agriculture seeks to sustain agriculture and food security while conserving natural resources and enhancing the economic and social wellbeing of farmers. Agriculture practices that are sustainable in India are: Agroforestry, Crop rotation, Rainwater harvesting, Organic farming, Natural farming. The researchers Pradhan et al. (2021) discussed various sustainable practices and emphasized the need for increased institutional support and adoption of these practices. Malathi and Tomy (2024) reported that natural farming can lead to saving in the cost of inputs but the impact on yield sustainability varies with the crop and region. In their study Jha et al. (2024) determined that socio-economic factors like education and household characteristics and extension service availability affect the adoption of sustainable inputs by farmers, and sustainable-input adoption can lead to better agricultural value. Swami and Parthasarathy (2024) further highlighted the importance of information, communication, credit and government support in encouraging sustainable agricultural practices. Some (2024) associated climate action in agriculture with other SDGs, focusing on the economic, environmental and social aspects. Climate change, soil degradation, water scarcity, credit and market access were important challenges identified by UNEP (2024). Hence, the focus of the present research is on contribution of women entrepreneurs in food processing for sustainable agriculture by value addition, utilization of the resources, strengthening of agricultural supply chain and market linkage.

Sustainable Food Supply Chains

Sustainable food supply chain is a footstep of sustainable agriculture towards the entire food chain from the farm to the consumer. It involves production, procurement, processing, storage, transportation, distribution, consumption and marketing. Almuflih et al. (2022) analyzed the concept of sustainability in processed food supply chains in India, and highlighted the need to consider sustainability at the various functional stages of the food supply chain. They pointed out the need to consider the economic, environmental and social aspects when establishing sustainable processed-food supply chains.

Sharma et al. (2023) studied sustainable fresh food supply chains in India based on the concepts of green resilient agile sustainable (GRAS) supply chains. Their work shows the importance of incorporating environmental performance in concert with resilience and responsiveness in designing sustainable food supply chains. Paul, Shukla and Trianni (2023) investigated food processing supply chain sustainability challenges and found the 22 sustainability challenges. They identified a significant challenge related to their increase in food processing costs, which closely aligned with operational and supply chain sustainability, proving the economic with supply chain sustainability is connected.

Recent studies focusing on Indian food-grain supply chains also have explored social sustainability. In India, a 2022 study accounted for procurement, transportation and inventory and facility-location factors in a food-supply-chain design model to enhance social sustainability. The study also brought out the storage capacity of the food-grain system in India.

ROLE OF WOMEN ENTREPRENEURS IN SUSTAINABLE AGRICULTURE

Women entrepreneurs are important in the promotion of sustainable agriculture through the conversion of agricultural produce to value-added products thus enhancing the income generation and market opportunities of the farmers. Women's involvement in food processing activities helps reduce post-harvest losses, extend the shelf life of products and improve food quality and safety. Their enterprises promote the use of locally available agricultural resources, thus supporting rural livelihoods and strengthening local economies. Innovation is encouraged by women-led food processing enterprises through new products, eco-friendly packaging and modern processing technologies. These measures stimulate competition on the market and encourage environmentally sustainable practices. In addition, women entrepreneurs generate jobs, especially for rural women, thus contributing to poverty reduction, the promotion of gender equality and inclusive economic development.

Women entrepreneurs connect farmers, processors, distributors and consumers to create stronger agricultural value chains and enhance the resilience of food supply systems. Active engagement of the farmers contributes towards food security, sustainable utilization of resources and long-term sustainability of agricultural production.



Challenges

Women entrepreneurs in the food processing sector face several challenges that hinder their business growth and contribution to sustainable agriculture and food supply chains.

- Limited access to institutional finance and credit facilities.
- Inadequate technical knowledge and modern food processing technologies.
- Poor infrastructure, including storage, transportation, and cold chain facilities.
- Limited market access and weak marketing networks.
- Insufficient entrepreneurial and managerial training.
- Regulatory complexities and quality certification requirements.
- Digital divide and limited adoption of e-commerce platforms.
- Supply chain disruptions due to climate change and market uncertainties.
- Social and cultural barriers that restrict women's entrepreneurial participation.
- High production costs and intense market competition.

These challenges reduce productivity, profitability, and the long-term sustainability of women-led food processing enterprises.

STRATEGIES FOR STRENGTHENING SUSTAINABLE AGRICULTURE AND FOOD SUPPLY CHAINS

Strengthening sustainable agriculture and food supply chains requires coordinated efforts involving government agencies, financial institutions, educational organizations, and industry stakeholders.

Key strategies include:

- Expanding access to affordable finance and credit for women entrepreneurs.
- Providing entrepreneurship development and technical training programmes.
- Promoting adoption of modern food processing technologies.
- Developing cold storage, warehousing, and transportation infrastructure.
- Encouraging digital marketing and e-commerce adoption.
- Strengthening farmer-producer-entrepreneur linkages.
- Promoting sustainable packaging and environmentally friendly production practices.
- Enhancing access to domestic and international markets.
- Supporting innovation, product diversification, and value addition.
- Encouraging collaboration through Self-Help Groups (SHGs), Farmer Producer Organizations (FPOs), and cooperatives.

These strategies will improve supply chain efficiency, reduce food losses, increase farmers' incomes, and enhance the competitiveness of women-led enterprises.

HYPOTHESES

H₀₁: There is no significant difference among the five groups in their ability to make appropriate decisions when managing their business.

H₁₁: There is a significant difference among the five groups in their ability to make appropriate decisions when managing their business.

H₀₂: There is no significant difference among the five groups in their ability to solve problems that arise in their business.

H₁₂: There is a significant difference among the five groups in their ability to solve problems that arise in their business.

H₀₃: There is no significant difference among the five groups in their difficulty in managing the daily activities of their business.

H₁₃: There is a significant difference among the five groups in their difficulty in managing the daily activities of their business.

H₀₄: There is no significant difference among the five groups in the skills needed to improve their food-processing business.

H₁₄: There is a significant difference among the five groups in the skills needed to improve their food-processing business.

H₀₅: There is no significant difference among the five groups in their ability to make business decisions independently.

H₁₅: There is a significant difference among the five groups in their ability to make business decisions independently. give me five to eight points.

RESEARCH METHODOLOGY

The study adopted a quantitative research approach using a descriptive research design to examine the role of women's entrepreneurship in strengthening sustainable agriculture and food supply chains through food processing. Primary data were collected from 230 respondents using a structured questionnaire containing demographic questions and statements measured on a five-point Likert scale. The collected data were analysed using the Statistical Package for the Social Sciences (SPSS). Percentage analysis was used to describe respondents' demographic characteristics, while correlation analysis examined relationships between selected variables and one-way ANOVA was employed to identify significant differences among groups in entrepreneurial skills, decision-making, and problem-solving capabilities. The study used a significance level of 5% for hypothesis testing.



DATA ANALYSIS

Table:1 Demographic profile

	Particulars	Frequency	Percentage
Age	Below 25 years	30	13.0
	26–35 years	52	22.6
	36–45 years	21	9.1
	46–55 years	41	17.8
	Above 55 years	86	37.4
Current Place of Residence	Rural Village	53	23.0
	Town	38	16.5
	Municipality	36	15.7
	Corporation/City	103	44.8
Marital status	Single	53	23.0
	Married	38	16.5
	Widowed	36	15.7
	Divorced	103	44.8
Educational Qualification	School Level	23	10.0
	Diploma	15	6.5
	Undergraduate	38	16.5
	postgraduate	36	15.7
	Doctorate	108	47.0
	Others	10	4.3
Family Size	Up to 3 members	60	26.1
	4–5 members	58	25.2
	6–7 members	63	27.4
	Above 7 members	49	21.3

Source: Primary data

The demographic profile of the 230 respondents indicates considerable variation in their personal and family characteristics. Regarding age, the largest group is respondents aged above 55 years (37.4%), followed by those aged 26–35 years (22.6%), 46–55 years (17.8%), below 25 years (13.0%), and 36–45 years (9.1%). This indicates that older respondents constitute a substantial proportion of the sample. With respect to current place of residence, 44.8% of respondents live in corporations/cities, followed by rural villages (23.0%), towns (16.5%), and municipalities (15.7%). Thus, a relatively higher proportion of respondents are located in urban areas.

Regarding marital status, 44.8% are divorced, while 23.0% are single, 16.5% are married, and 15.7% are widowed. In terms of educational qualification, 47.0% have doctoral qualifications, followed by undergraduate (16.5%), postgraduate (15.7%), school-level education (10.0%), diploma (6.5%), and other qualifications (4.3%). Finally, regarding family size, 27.4% have 6–7 members, 26.1% have up to 3 members, 25.2% have 4–5 members, and 21.3% have more than 7 members. Overall, the respondents represent diverse demographic and family backgrounds.

Table:2 Age and Entrepreneurial Skills

ANOVA						
		Sum of Squares	Df	Mean Square	F	Sig.
I can make appropriate decisions when managing my business.	Between Groups	344.118	4	86.029	454.572	.000
	Within Groups	42.582	225	.189		
	Total	386.700	229			
I can solve problems that arise in my business.	Between Groups	418.123	4	104.531	537.895	.000
	Within Groups	43.725	225	.194		
	Total	461.848	229			
I find it difficult to manage the daily activities of my business.	Between Groups	398.095	4	99.524	620.359	.000
	Within Groups	36.097	225	.160		
	Total	434.191	229			



I lack the skills needed to improve my food-processing business.	Between Groups	203.149	4	50.787	257.372	.000
	Within Groups	44.399	225	.197		
	Total	247.548	229			
I have difficulty making business decisions on my own.	Between Groups	239.114	4	59.778	376.898	.000
	Within Groups	35.686	225	.159		
	Total	274.800	229			

Source: Primary data

The ANOVA findings indicate that respondents differ significantly across the five groups in their perceptions of business management skills. Significant differences are observed in their ability to make appropriate business decisions, solve business problems, manage daily activities, possess skills for improving their food-processing businesses, and make independent business decisions. Since $p < 0.001$ for all five statements, the null hypothesis of no significant difference is rejected.

The highest F-value is observed for “I find it difficult to manage the daily activities of my business” ($F = 620.359$, $p < 0.001$), indicating a statistically significant variation among the groups for this statement. However, ANOVA alone does not identify which specific groups differ from each other. A post-hoc test such as Tukey HSD is required to determine the specific group differences.

FINDINGS OF THE STUDY

The study highlights the importance of women’s entrepreneurship in strengthening sustainable agriculture and food supply chains through food-processing activities. The reported ANOVA results indicate statistically significant differences among the comparison groups in business decision-making, problem-solving, daily business management, and entrepreneurial skills ($p < .001$). These findings emphasise the importance of managerial capabilities in women-led enterprises. The literature review further highlights the relevance of financial access, technological adoption, food safety, market linkages, and institutional support in promoting sustainable food-processing practices. However, the direct impact of these factors on supply chain sustainability requires further empirical investigation.

DISCUSSION OF THE STUDY

The findings underline the importance of strengthening women entrepreneurs’ managerial and operational capabilities to improve their participation in food-processing value chains. These results are consistent with the perspectives of Cabrera and Mauricio (2017) on entrepreneurial capabilities and Nosratabadi et al. (2020) on business model innovation in food supply chains. Furthermore, the literature reviewed by Mukherjee, Gaikwad, and Pal (2024) highlights persistent challenges, including fragmented supply chains, inadequate storage facilities, and food loss and waste in India. Together, these insights suggest that combining entrepreneurial development with appropriate technology, improved infrastructure, and stronger market linkages may contribute to more inclusive and sustainable agricultural supply chains.

SUGGESTIONS AND RECOMMENDATIONS

Women entrepreneurs should be provided with targeted training in business management, financial literacy, digital marketing, food safety, and modern food-processing technologies. Government agencies and financial institutions should facilitate access to affordable credit, shared processing facilities, storage infrastructure, and relevant certification support. Stronger partnerships among women entrepreneurs, farmers, Self-Help Groups, Farmer Producer Organisations, and retail markets should also be encouraged to improve raw-material procurement and product distribution. In addition, future research should empirically examine how women’s entrepreneurial capabilities and food-processing activities influence economic empowerment, food loss reduction, rural employment, and environmental sustainability.

POLICY IMPLICATIONS

The findings highlight the need for comprehensive policy interventions that strengthen women entrepreneurship in food processing and promote sustainable agriculture.

Policy recommendations include:

- Expanding financial assistance through low-interest loans and credit guarantee schemes.
- Strengthening entrepreneurship development programmes specifically designed for women.
- Investing in rural infrastructure, including cold chains, logistics, and food processing parks.
- Simplifying regulatory procedures and quality certification processes.
- Promoting digital literacy and technology adoption among women entrepreneurs.
- Encouraging public-private partnerships to improve market access.
- Strengthening extension services and technical support for food processing enterprises.
- Supporting research and innovation in sustainable food processing technologies.



- Promoting gender-inclusive agricultural and industrial policies.
- Encouraging export-oriented food processing enterprises through financial and marketing incentives.

Effective policy implementation will improve women's participation in agricultural value chains, enhance rural employment, and strengthen sustainable food systems.

CONCLUSION

Women entrepreneurship in the food processing sector has become a powerful driver of sustainable agriculture and resilient food supply chains. By adding value to agricultural products, reducing post-harvest losses, creating employment opportunities, and improving rural livelihoods, women-led enterprises make significant contributions to economic development and food security. Their entrepreneurial activities also promote innovation, resource efficiency, and environmentally sustainable production practices, thereby strengthening the overall agricultural value chain.

Despite these contributions, women entrepreneurs continue to face barriers related to finance, technology, infrastructure, market access, and institutional support. Addressing these constraints through targeted policies, capacity-building programmes, improved infrastructure, digital transformation, and stronger market linkages is essential for unlocking their full potential. Strengthening sustainable agriculture and food supply chains through women entrepreneurship requires collaborative efforts from governments, financial institutions, research organizations, industry stakeholders, and local communities. Empowering women entrepreneurs will not only enhance the competitiveness of the food processing sector but also contribute to inclusive economic growth, rural development, environmental sustainability, and the achievement of the Sustainable Development Goals (SDGs). This integrated approach will ensure resilient agricultural systems, sustainable food supply chains, and long-term prosperity for farming communities and society as a whole.

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