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SOCIO-ECONOMIC ANALYSIS OF WOMEN'S PARTICIPATION IN SILK INDUSTRY IN BIHAR

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Abstract:
This study explores the role of rural women in sericulture, focusing on their involvement and challenges in the Tussar silk industry in Bihar, India. With a focus on four districts—Purnia, Katihar, Banka, and Bhagalpur—the study surveyed 120 women, 30 from each district, engaged in sericulture. Women constitute 60% of the workforce in sericulture, which contributes 28.41% of household income, making it a critical livelihood source in India. (Bhattarcharjya, D, et al. (2020)). Their involvement is concentrated in activities close to home, as they face challenges in tasks requiring external mobility. Many women entrepreneurs in this sector have limited education, and there is a need for government and sericulture departments to collaborate on targeted training and development programs. These initiatives aim to uplift the socioeconomic conditions of rural women and enhance their participation in sericulture for economic empowerment.

Keywords: Sericulture, Rural Women Empowerment, Tussar Silk, Livelihoods

INTRODUCTION

One of the most valuable products in the world, both traditionally and commercially, is silk. For millions of people, it not only generates income but also employment opportunities. In fiscal year 2024, India generated 38,913 metric tons of silk. India's total silk production for the year 2022-2023 was 36,543 MT, reflecting a year-on-year rise of 4.69% over the prior year's production of 34,903 MT. (IBEF Oct 2024). India is the world's second-largest producer of silk, and it holds the unusual distinction of being the only nation to produce all five varieties of silk: temperate, tropical, mulberry, Eri, and Muga. (IBEF Oct 2024) The most important measure of the nation's economic development and progress is family income. In rural India today, women place a great deal of significance on earning a living.

Although women comprise about fifty percent of the worldwide population, their involvement in the workforce and the allocation of work hours vary considerably. The global labor force participation rate for women exceeds 50%, whereas for men it is approximately 80%. (Female labor force participation, January 10, 2022, World Bank)

In several countries, including India, women are often paid barely two-thirds or even half as much as men for performing the same activity (FAO, 1995). For rural families to improve their standard of living in terms of food, finances, and education, the income of the women in the family is crucial. In actuality, it is discovered that women generally shoulder two burdens in the course of development: one on the home front and one on the economic front. Research shows that women tend to work during times when other family members are sleeping. To support their families, women are being inspired to engage in income-generating activities both within and outside the home due to the ongoing price increases. In 2021, women made up 23% of India's formal and informal labour, down from roughly 27% in 2005, according to the most recent data from the World Bank. Women in India face several obstacles in the workplace, such as unfair pay gaps and gender inequalities in jobs. Bihar has one of the lowest rates of female labour force participation in the

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nation. In metropolitan areas, just 6.4% of women work, whereas in rural areas, 3.9% do so. Bihar's raw silk production is relatively modest, with only 9 metric tons produced in the same fiscal year (Statista,2024). However, it is essential to note that Bihar has a rich tradition of silk weaving, especially in regions like Bhagalpur. (fibre2fashion,2009) Bhagalpur is known for its exquisite Tussar silk, which is copperish and woven from silkworms that thrive on plants like Asan and Arjun.

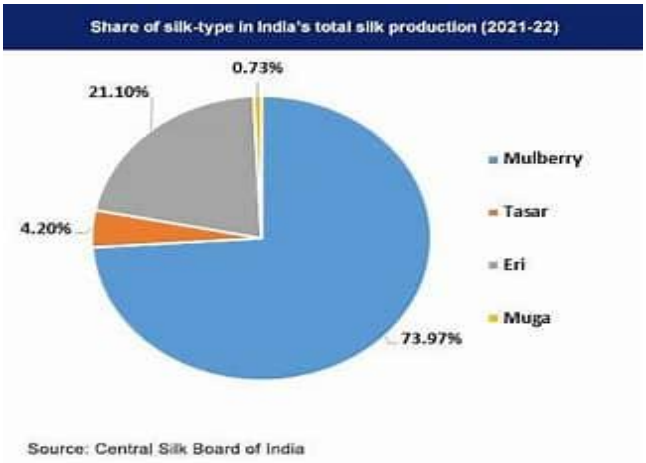

Figure 1. Share of Silk type in India's total Silk Production (2021-22T

For the most part, sericulture is a village-based industry that employs a great number of people. For most Indian dryland farmers, especially those in Bihar, mulberries are one of their main commercial crops. It has a big impact on improving rural household income, which helps pay for housing, food, and education.

Raw Silk Production has achieved an all-time production of 40,800 MT. The raw silk production record of 36,582 MT during 2022-23 (Table 1) is 4.8% higher than the achievement. The achievement is 89.7% of the total targeted for 2021-22 (34,903 MT).

Table 1. Raw Silk Production in India

	Particulars	2022-23		2021-22	% Increase over 2021-22
		Target	Achievement		
A	**Mulberry plantation (ha)**	260000	253182	242277	4.5
B	**Mulberry Raw Silk (MT)**				
	Bivoltine	9250	8904	7941	12.1
	Crossbreed	19510	18750	17877	4.9
	Sub-Total (B)	**28760**	**27654**	**25818**	**7.1**
C	**Vanya Silk (MT)**				
	Tasar	3850	1318	1466	-10.1
	Eri spun silk	7900	7349	7364	-0.2
	Muga	290	261	255	2.4
	Sub-Total (C)	**12040**	**8928**	**9085**	**-1.7**
	Total (B+C)	**40800**	**36582**	**34903**	**4.8**

Source: Central Silk Board annual report 2022-23

Literature Review. Bihar's silk industry depends heavily on women, who make substantial contributions to weaving, reeling, and sericulture. According to studies, their involvement is motivated by cultural heritage, traditional skills, and economic need. Ahmad and Fatima's (2025)

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study examines the socio-economic impact of women's participation in the Tussar silk business in Bihar, India. It highlights that women represent 60% of the workforce in sericulture, greatly contributing to household income (Bhattarcharjya et al., 2020). The study highlights the need for specialized training and development initiatives to expand the socio-economic status of rural women engaged in sericulture. The report highlights the difficulties encountered by women, including restricted schooling and mobility, which hamper their complete engagement in the sector. Government and sericulture departments are recommended to work together to resolve these complications and increase economic empowerment (Ahmad & Fatima, 2025).

Moreover, the study validates findings from other areas, such as Karnataka, where women's participation in mulberry silk production has been significant (Madhu et al., 2023). Parallel socio-economic advantages and obstacles have been noted in the sericulture sector of West Bengal, where women are vital to the agricultural framework (Bhattarcharjya et al., 2020). The influence of sericulture on the incomes of rural women in Assam has been recorded. It highlights the necessity of acknowledging and addressing gender discrimination in the workforce (Hatibaruah, 2022).

Importance of the study. This study aims to comprehend the contribution of Agro-based enterprises and agriculture, which is important to the development of rural economies in developing countries such as India. Since women make up more than 60% of the labour and consumption, sericulture is a profession by and for women. (Handloom Textile and Sericulture, Assam) Sericulture gives women the opportunity to be actively involved in circumstances and to be recognized and elevated in the family and community. Villages are looking for supplementary rural businesses like sericulture because of the lack of land, the poor financial returns, and the short growing season of agriculture. Taking part in the manufacturing process, since women manufacture 60% of the silk used in sericulture, and learn about the issues they confront. (Handloom Textile and Sericulture, Assam) The study's respondents were the rural women business owners in Purnia, Katihar, Banka, and Bhagalpur, Bihar, who combined agriculture with sericulture.

Objectives.

- To research women's involvement in different Sericulture activities and decision-making to improve their economic situation.
- To examine the driving factors and motivations behind women's decision to pursue sericulture.
- To study the sericulture industry's potential, risks, weaknesses, and strengths.

Selection of the Research Domain. Bihar districts of Purnia, Katihar, Banka, and Bhagalpur are renowned for producing Tussar silk. The districts' soil characteristics, climate, and rainfall have made them famous for producing silk. Since rain covers 80% of the land, agriculture is mostly dependent on the monsoon season. The baseline survey area was purposefully chosen based on the availability of various farmer types in order to align with the study's goal. The area's farmers were widely dispersed and used a diverse farming method.

Selection of the sample villages and sampling. People from the Department of Sericulture, the Silk Board, the Silk Markets, cooperative organizations, and the Gram Panchayats in the villages were contacted to determine the sample villages. The area used for sericulture served as the selection criterion. For the study, a random sample of thirty female cultivators from each district was chosen. For the purpose of gathering data, the number of families, the kind of farmers, and the crops being grown were taken into consideration while selecting the villages at random. The study was conducted with consideration for the challenges associated with women's income, and feasible measures were implemented to guarantee the highest level of accuracy in the data obtained.

Selection of Respondents. The number of acres they possessed and the volume of crops they cultivated were taken into consideration while choosing sericulturists. Consequently, a random

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selection of respondents was made from each District. Out of the 500 respondents, 125 were selected from each district, and all of them were involved in the mulberry growing practice.

Collection of primary and secondary data. The material was gathered using a well-organized schedule and in-person interviews. Secondary data from several departments and sources, including the Central Silk Board, the Department of Sericulture, the District Information and Statistics Office, the Literature Review, etc., was used to gather the extra information.

Observations and Analysis. The percentage of women's labour that could be used to create a mulberry crop on one acre is shown in Table 2 for operation-wise labour involvement. According to Table 2, the overall labour necessities were projected to be 49.4 person-days, of which around 25.4 person-days were contributed by women (51.4 percent). When it came to women's labour share, weeding contributed the most (10.5 person-days), followed by planting (6.6 person-days), FYM application (3.51 person-days), and so on. With 25.7 person-days, medium farmers contributed the largest amount of labour to the total labour need; small and marginal farmers came in second and third, with 25.3 and 25.3 person-days, respectively. Table 2 suggests that the amount of labour needed for women was nearly equal to that of farm labour.

Table 2. Process-wise, the share of the women workforce in the mulberry plantation.

No.	Operation		FYM/manure application		Transportation of mulberry cutting or sapling		Planting of mulberry saplings or cuttings		Fertilizer application		Spraying of plant protection chemicals		Irrigation		Weeding		Mulberry leaf harvesting		Total	
			unit	%	unit	%	unit	%	unit	%	unit	%	unit	%	unit	%	unit	%	unit	%
1	**Marginal farmers**	Men	3.2	6.6	0.7	1.4	6.5	13.4	0.4	0.8	0.1	0.2	1	2.1	11	22.8	2.2	4.6	25.2	52
2		Women	4.7	9.7	3.1	6.4	6.3	13.1	1.6	3.3	1.7	3.6	2	3.7	1.2	4.1	1.9	3.9	22.3	47.8
3	**Small farmers**	Men	3.6	7.4	0.7	1.5	6.6	13.1	1.4	3.4	0.1	0.1	1.1	2.2	10.3	20.9	2.6	5.2	26.3	53.7
4		Women	4.4	8.9	3.1	6.3	6.3	12.8	1.7	3.2	1.8	3.7	1.8	3.6	3.0	6.0	1.8	3.6	23.8	48.1
5	**Medium farmers**	Men	3.5	7.0	0.7	1.4	6.7	13.3	0.3	0.5	0.1	0.2	1.2	2.4	10.4	20.7	2.8	5.5	25.7	51.0
6		Women	4.6	9.1	3.1	6.2	6.3	12.5	1.9	3.8	1.9	3.8	1.7	3.4	2.9	5.8	2.2	4.4	24.7	49.0
7	**Overall**	Men	3.5	7.1	0.7	1.4	6.6	13.5	0.3	0.7	0.1	0.2	1.1	2.3	10.5	21.4	2.5	5.1	25.4	51.7
8		Women	4.5	9.2	3.1	6.3	6.3	12.9	1.8	3.6	1.8	3.7	1.7	3.5	2.7	5.6	2.0	4.0	24.0	48.8

Source: data analyzed on Women's participation in the production of mulberry silk in Bihar (Katihar, Purnia, Banka, and Bhagalpur), India

METHODS

This study adopted a quantitative approach with a correlational design. This design was chosen to identify and analyze the relationships between the variables studied: perceptions of organizational justice, employee commitment, job satisfaction, and whistleblowing intentions. The quantitative approach, grounded in the philosophy of positivism (Sugiyono, 2009), allows for objective measurement of social phenomena through numerical data and empirical hypothesis testing.

RESULT AND DISCUSSION

This section presents the results of the data analysis obtained from the study, followed by an in-depth discussion of the implications of these findings. Data analysis was conducted using the Partial Least Squares Structural Equation Modeling (PLS-SEM) method with the assistance of SmartPLS 4 software.

CONCLUSION

The study sheds light on the significant participation of women in sericulture activities, particularly in regions like Purnia, Katihar, Banka, and Bhagalpur, in Bihar. Sericulture emerges as a crucial source of livelihood for rural women, contributing substantially to household income. The

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findings underscore that approximately 60% of respondents are involved in sericulture, constituting the primary source of income for many households, surpassing even other sectors like the service industry. Despite the substantial involvement of women in sericulture, the study reveals certain challenges and constraints they face. One notable aspect is the minimal educational background of many female sericulture entrepreneurs. It poses hurdles in accessing training and development opportunities essential for enhancing their socioeconomic status. Collaborative efforts between the government, the sericulture department, and other relevant stakeholders are imperative to design and implement effective training programs tailored to the needs of rural women engaged in sericulture.

Furthermore, the study emphasizes the importance of recognizing and addressing gender disparities in the workplace. While women contribute significantly to the sericulture sector, they encounter obstacles such as unequal pay and limited access to resources and opportunities. Efforts to promote gender equality and empower women in sericulture are crucial for fostering inclusive and sustainable growth in rural areas. In conclusion, sericulture stands out as a vital avenue for women's economic empowerment in Bihar. By addressing the challenges identified in this study and implementing targeted interventions, policymakers can foster an enabling environment for women to thrive as entrepreneurs and contribute meaningfully to the socioeconomic development of their communities.

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