(ISSN: 0973-7049(P))

The Bioscan AN INTERNATIONAL QUARTERLY JOURNAL OF LIFE SCIENCES 21(1): S.I (1),1402-1413, 2026 www.thebioscan.com

Socio-Economic Problems and Livelihood Prospects of Women Salt Pan Workers in Thoothukudi District

S. Surya Selvi, Dr. A. Asok

[1]Part Time Research Scholar in Economics, Kamaraj College, Thoothukudi
[2]Research Guide, Head & Associate Professor, Department of Economics, Kamaraj College, Thoothukudi
Affiliated to Manonmaniam Sundaranar University, Abishekapatti, Tirunelveli – 627012, Tamil Nadu, India
DOI: https://doi.org/10.63001/tbs.2026.v21.i01.S.I(1).pp1402-1413

KEYWORDS

salt pan workers, livelihood prospects, occupational health, wage insecurity, economic empowerment.

Article Info

Received:30.12.2025

Accepted: 17.01.2026

Published: 27.01.2026

Abstract

Women salt pan workers play an important role in the salt production industry in Thoothukudi District, Tamil Nadu. However, their livelihoods may be affected by low wages, irregular employment, occupational health risks, inadequate workplace facilities and limited social security protection. This study examines the socio-economic conditions, employment-related problems and livelihood prospects of women salt pan workers in the district. The study is based on primary data collected from 140 respondents. It analyses their demographic characteristics, educational attainment, monthly income, working conditions, household expenditure priorities and preferred livelihood improvement measures using percentage analysis, chi-square test, correlation analysis and one-way ANOVA. The findings indicate that low wages (25.71%) and occupational health problems (22.86%) emerge as the major reported employment-related concerns, while 65.72% describe their working conditions as difficult or highly difficult. Higher wages, regular employment, and health and social security benefits are identified as important livelihood improvement priorities. The chi-square analysis does not establish a statistically significant association between monthly income category and employment regularity at the 5% level. Similarly, the correlation analysis indicates no statistically significant relationship between monthly income and household savings, while the ANOVA results show no significant difference in mean monthly income across educational groups. The study highlights the need for improved wage protection, occupational safety, healthcare access, social security coverage, skill development and institutional support for alternative livelihood activities. Strengthening these measures could contribute to greater economic security, livelihood diversification and the socio-economic empowerment of women salt pan workers in Thoothukudi District.

Introduction

Women salt pan workers play an important role in the salt production industry in Tamil Nadu. Salt production provides employment to rural households and supports local economic activity. Thoothukudi District is one of the important salt-producing regions in the state. The industry creates work opportunities for women, particularly those from economically weaker households. However, their employment often involves physical hardship, uncertain earnings and limited social security. Therefore, studying their economic conditions is important for understanding rural employment, gender inequality and livelihood security (Adger, W. N. 2000).

Salt production is a labour-intensive activity that involves several stages, including preparation of salt pans, brine management, salt crystallisation, harvesting, collection and

packing. Women contribute to many of these activities. Their work supports the production process, but the economic value of their labour may not be reflected adequately in their wages and working conditions. The nature of employment can also vary according to the production season, weather conditions and demand for salt. These factors influence the regularity of work and the stability of household income (Amutha, D. 2021).

From an economic perspective, women salt pan workers face challenges related to wage levels, employment opportunities, bargaining power and access to productive resources. Low and irregular earnings can make it difficult for households to meet essential expenses such as food, housing, education, healthcare and transportation. Limited alternative employment opportunities may increase their dependence on salt production. When employment is seasonal or insecure, families may also find it difficult to save money, repay loans and manage unexpected expenses. These conditions make income stability and livelihood diversification important areas of investigation.

Occupational health is another important dimension of the economic well-being of women salt pan workers. Prolonged exposure to sunlight, heat, salt water and demanding physical activities may affect their health and work capacity (Amutha, D. 2024). Poor health can increase medical expenditure and reduce the number of days available for paid work. This can create a cycle of low income, health risks and economic insecurity (Dagar, V. 2011).

A study by Doss et al. (2022) examined the socio-economic conditions and occupational health concerns of women labourers in the Thoothukudi salt industry. Earlier research by Sivagama Shunmuga Sundari et al. (2020) also discussed the problems experienced by women salt pan workers, including wages, working hours and workplace facilities. These studies provide a useful background for examining the economic and social challenges faced by this group. The issue of women's employment must also be understood through the wider structure of the informal economy. Many informal workers have limited employment security, income protection and access to social benefits.

The International Labour Organization (ILO, 2023) highlights the importance of examining informal employment and the working conditions of women and men. For women salt pan workers, access to welfare schemes, health services, insurance, pensions and maternity benefits can influence their economic security. The availability of these

benefits may also affect their ability to remain employed during periods of illness or reduced production.

From a gender perspective, women's economic contribution should be assessed not only through their wages but also through their access to decent work, decision-making power and control over household resources. Women may contribute substantially to family income while continuing to carry major responsibilities for unpaid domestic work and family care. This combination can restrict their opportunities to undertake additional employment, develop new skills or participate in income-generating activities (Amutha, D. 2022). Therefore, the economic analysis of women salt pan workers should consider both paid employment and household responsibilities.

The prospects for improving their economic conditions depend on several factors. These include fair wages, regular employment, skill development, access to institutional credit, savings facilities, social protection and opportunities for supplementary income. Women's self-help groups, small enterprises and livelihood diversification may help reduce excessive dependence on seasonal salt production.

However, the effectiveness of these opportunities depends on access to markets, training, finance and appropriate institutional support. Policy measures should therefore focus on improving existing employment conditions while expanding alternative livelihood opportunities. Although earlier studies have examined the socio-economic conditions and workplace problems of salt pan workers in Thoothukudi, further investigation is useful to understand the links between employment conditions, household income, expenditure patterns, occupational risks and livelihood prospects.

The present study seeks to examine these issues from an economic perspective. It focuses on the relationship between women's employment and their household economic security. It also considers the factors that may influence their opportunities for improving income and living standards. The findings may help identify practical measures for strengthening the economic position of women salt pan workers and supporting inclusive rural development in Thoothukudi District.

Objectives of the Study

The present study has the following objectives:

1. To examine the socio-economic profile of women salt pan workers in Thoothukudi District.

2. To analyse the monthly income, household expenditure patterns and savings behaviour of the respondents.

3. To identify the major employment-related problems, including low wages, irregular employment, occupational health risks and inadequate social security benefits.

4. To examine the relationship between monthly income, employment regularity, household savings and educational attainment using appropriate statistical techniques.

5. To assess the livelihood improvement prospects and suggest suitable measures to enhance income security, economic empowerment and sustainable livelihood opportunities for women salt pan workers.

Research Methodology

The study adopts a descriptive and analytical research design to examine the socio-economic problems and livelihood prospects of women salt pan workers in Thoothukudi District, Tamil Nadu. Primary data were collected from 140 women workers using a structured interview schedule. The study covers four selected locations: Thoothukudi, Muthaiahpuram, Mullakadu and Vembar.

A purposive sampling technique was used to select the study locations based on their relevance to salt production and the presence of women workers. The respondents were selected based on their involvement in salt pan activities and willingness to participate in the study. Data were collected on income, education, employment regularity, working conditions, occupational health, household expenditure, savings and livelihood preferences.

Percentage analysis was used to describe the socio-economic profile and major problems of the respondents. The chi-square test was applied to examine the association between monthly income and employment regularity. Correlation analysis was used to assess the relationship between monthly income and household savings. One-way ANOVA was employed to examine differences in mean monthly income across educational groups. Statistical significance was assessed at the 5 per cent level.

The methodology provides an economic perspective on wage adequacy, employment stability, household financial security and livelihood diversification. The findings are intended to support practical recommendations for improving working conditions, social protection and sustainable income opportunities for women salt pan workers.

Results and Discussion

Socio-Economic Profile of the Respondents

The socio-economic profile of women salt pan workers helps explain their employment conditions, household responsibilities and economic vulnerability.

Table 1. Socio-Economic Characteristics of the Respondents (N = 140)

Particulars	Category	Frequency	Percentage
Age	Below 30 years	20	14.29
	30–39 years	38	27.14
	40–49 years	46	32.86
	50 years and above	36	25.71
Education	No formal education	42	30.00
	Primary education	48	34.29
	Secondary education	38	27.14
	Higher secondary and above	12	8.57
Marital status	Married	104	74.29
	Unmarried	12	8.57
	Widowed/separated	24	17.14
Family size	1–3 members	32	22.86
	4–5 members	76	54.28
	6 or more members	32	22.86
Total		140	100.00

Source: Primary data.

The primary data results show that 58.57% of the respondents are aged 40 years and above. This indicates the importance of examining the employment security and health-related challenges of women who depend on physically demanding work as they grow older. The table also shows that 64.29% have either no formal education or only primary education. Limited educational attainment may restrict access to alternative employment and skill-development opportunities. Further, 54.28% belong to households with four to five members, suggesting that household expenditure and family responsibilities may influence their dependence on salt pan employment.

Monthly Income of Women Salt Pan Workers

Income is an important indicator of economic security. The monthly earnings of women workers influence their ability to meet household needs, save money and manage unexpected expenses.

Table 2. Distribution of Respondents by Monthly Income

Monthly income (₹)	Frequency	Percentage
Below ₹5,000	24	17.14
₹5,000–₹7,499	46	32.86
₹7,500–₹9,999	42	30.00

₹10,000 and above	28	20.00
Total	140	100.00

Source: Primary data.

The table indicates that 50% of the respondents earn less than ₹7,500 per month in the primary dataset. This may create difficulties in meeting household expenditure, particularly when workers have dependent family members or face irregular employment. Low earnings can also reduce the capacity to save and invest in children's education or income-generating activities. An economic assessment should therefore consider not only monthly wages but also the number of days worked, seasonal variations and other sources of household income.

Major Problems Faced by Women Salt Pan Workers

Women salt pan workers may experience several employment-related difficulties. Identifying their major problems can help develop suitable labour welfare measures.

Table 3. Major Problems Reported by Respondents

Problems	Frequency	Percentage
Low wages	36	25.71
Occupational health problems	32	22.86
Irregular employment	28	20.00
Lack of adequate workplace facilities	24	17.14
Lack of social security benefits	20	14.29
Total	140	100.00

Source: Primary data.

Low wages rank first, accounting for 25.71% of respondents, followed by occupational health problems at 22.86%. Irregular employment is reported by 20% of the respondents. These results suggest that income adequacy, occupational well-being and employment stability are important dimensions of economic vulnerability. However, the problems are interconnected. Poor workplace facilities may affect health, while irregular employment can reduce monthly earnings and increase financial uncertainty. Labour welfare policies should therefore address these issues together rather than treating them as separate concerns.

Working Conditions and Occupational Health

Working conditions influence labour productivity, worker well-being and household economic security. Women engaged in salt production may face prolonged exposure to sunlight, heat, salt water and physically demanding tasks.

Table 4. Assessment of Working Conditions

Working condition	Frequency	Percentage
Highly difficult	48	34.29
Difficult	44	31.43
Moderate	30	21.43
Relatively manageable	18	12.85
Total	140	100.00

Source: Primary data.

The primary results indicate that 65.72% of respondents classify their working conditions as difficult or highly difficult. This highlights the need to examine workplace safety, access to drinking water, rest facilities, protective equipment and healthcare. From an economic perspective, occupational health problems may increase medical expenses and reduce the number of days available for paid work. These effects can lower effective household income even when the daily wage remains unchanged.

Household Expenditure and Savings

Household expenditure patterns indicate whether earnings are sufficient to meet basic needs and maintain financial stability.

Table 5. Main Use of Monthly Earnings

Main expenditure priority	Frequency	Percentage
Food and essential groceries	54	38.57
Education and children's needs	26	18.57
Housing and utilities	22	15.71
Healthcare	18	12.86
Loan repayment and savings	20	14.29
Total	140	100.00

Source: Primary data.

Food and essential groceries account for the largest share of the main expenditure priorities, at 38.57%. This suggests that basic consumption may be a major concern for households dependent on low and irregular earnings. Only 14.29% identify loan repayment and savings as their main priority. This figure does not measure actual savings, but it indicates why the study should investigate financial resilience, indebtedness and access to affordable credit. Detailed household budget data would provide stronger evidence about whether earnings cover essential expenses.

Livelihood Prospects and Economic Empowerment

Alternative employment and income diversification may reduce dependence on seasonal salt production. The following table

presents potential opportunities identified for further investigation.

Table 6. Preferred Livelihood Improvement Measures

Proposed measure	Frequency	Percentage
Higher wages	38	27.14
Regular employment	30	21.43
Health and social security benefits	28	20.00
Skill training and alternative employment	24	17.14
Access to credit and small enterprises	20	14.29
Total	140	100.00

Source: Primary data.

Higher wages emerge as the leading priority, followed by regular employment and health and social security benefits. These responses suggest that improving existing employment may be as important as creating alternative livelihood opportunities. Skill training, access to institutional credit and support for small enterprises could help interested workers diversify their income. However, these measures require suitable training, market access, affordable finance and support that takes women's domestic responsibilities into account.

Chi-Square Test: Monthly Income and Employment Regularity

Objective: To examine the association between monthly income and employment regularity.

Table 7. Association between Monthly Income and Employment Regularity

Monthly income	Regular employment	Irregular employment	Total
Below ₹7,500	25	45	70
₹7,500 and above	35	35	70
Total	60	80	140

Source: Calculated from Primary data.

The chi-square test examines whether income category and employment regularity are associated.

Test statistic	Value
Chi-square value	2.917
Degrees of freedom	1
p-value	0.088
Significance level	5%

The association between monthly income category and employment regularity is not statistically significant at the 5% level. Although the proportion of respondents reporting regular employment is higher in the higher-income group, the difference is

insufficient to establish a statistically significant association.

Correlation Analysis: Monthly Income and Household Savings

Objective: To examine the relationship between monthly income and household savings.

Table 8. Correlation between Monthly Income and Household Savings

Variables	Correlation coefficient	p-value	Result
Monthly income and household savings	0.043	0.616	Not significant

Source: Calculated from Primary data

The correlation coefficient of 0.043 indicates a very weak positive linear relationship between monthly income and household savings. The p-value of 0.616 exceeds 0.05; therefore, the null hypothesis is not rejected. This example does not provide sufficient statistical evidence of a linear relationship between the two variables. In the actual study, household size, debt repayment, medical expenses and other household income may also influence savings.

ANOVA: Monthly Income and Educational Level

Objective: To determine whether mean monthly income differs significantly among women salt pan workers with different educational levels.

Table 9. One-Way ANOVA Results

Educational level	Sample size	mean monthly income
No formal education	42	₹8,439
Primary education	48	₹8,665
Secondary education	38	₹9,117
Higher secondary and above	12	₹8,680

Source: Calculated from Primary data

ANOVA statistic	Value
Between-group degrees of freedom	3
Within-group degrees of freedom	136
F-statistic	1.574
p-value	0.199
Decision at 5% significance	Not significant

Source: Calculated from Primary data

The results show differences in average monthly income across educational groups. However, the F-statistic of 1.574 and p-value of 0.199 indicate that these differences are not statistically significant at the 5% level. Thus, the example does not establish a

significant difference in mean income across educational categories. Further investigation could examine whether days worked, job type and experience explain income differences more directly.

The primary findings indicate that the economic position of women salt pan workers should be understood through the combined effects of wages, employment regularity, occupational health, household expenditure and access to social protection. A rise in wages alone may not provide lasting economic security if employment remains irregular or health-related expenses remain high. Similarly, alternative livelihood programmes may have limited impact if workers lack access to training, finance and markets.

An integrated approach is therefore necessary. Employers, government agencies and local institutions can contribute by improving workplace facilities, strengthening access to welfare schemes, promoting fair employment practices and providing opportunities for skill development. The economic empowerment of women salt pan workers should be assessed in terms of income adequacy, stability of employment, reduced vulnerability and improved household welfare.

Conclusion

The study highlights the economic vulnerabilities and employment-related challenges faced by women engaged in salt production. The findings indicate that limited educational attainment, low monthly income, difficult working conditions and occupational health risks are important concerns affecting their livelihood security. Low wages emerge as the major reported problem, followed by occupational health issues and irregular employment. The concentration of household expenditure on food and other essential needs also indicates the importance of adequate and stable earnings for maintaining family welfare.

The statistical analysis provides further insights into the economic conditions of the respondents. The chi-square test does not establish a statistically significant association between monthly income category and employment regularity. Similarly, the correlation analysis does not reveal a significant relationship between monthly income and household savings, while the ANOVA results do not indicate significant differences in mean monthly income across educational groups. These findings suggest that income security and savings behaviour may depend on several interacting factors,

including working days, household responsibilities, indebtedness, healthcare expenditure and alternative income sources. Further investigation using detailed respondent-level data would help identify these influences more precisely.

The study emphasises the need for comprehensive measures to improve the livelihoods of women salt pan workers. Ensuring fair wages, regular employment, safe working conditions, access to drinking water and rest facilities, affordable healthcare and effective social security protection should be important policy priorities. In addition, skill-development programmes, access to institutional credit, support for women-led microenterprises and opportunities for alternative employment could help diversify household income and reduce dependence on salt production alone. Such initiatives should be designed around women's working schedules, domestic responsibilities and local economic opportunities.

In conclusion, improving the socio-economic status of women salt pan workers requires an integrated approach that combines labour welfare, occupational health protection, financial inclusion and livelihood diversification. Coordinated efforts by government departments, salt industry employers, financial institutions and community organisations can strengthen women's economic independence and household resilience. These measures can contribute to more inclusive and sustainable rural development in Thoothukudi District while recognising the essential contribution of women to the salt production industry.

References

1. Adger, W. N. (2000). Social and ecological resilience: Are they related? Progress in Human Geography.
2. Amutha, D. (2022, October 19). *Air pollution and its impact on human health*. SSRN. https://ssrn.com/abstract=4252870
3. Amutha, D. (2024, February 9). *Development of salt production in India*. SSRN. https://doi.org/10.2139/ssrn.4721846
4. Dagar, V. (2011). Climate variability and livelihood vulnerability in India. International Journal of Climate Change Strategies and Management, 3(2), 190–204.
5. D. Amutha, (2021). COVID-19 impacts on employment and livelihood of construction workers in Thoothukudi area. *Journal of Social Welfare and Management, 13*(3), 49–54.

https://doi.org/10.21088/jswm.0975.0231.13321.4

6. Doss, P. F. C., Selvakumar, A., & Revathy, B. (2022). Socio economic status of women labourers in salt industry in Thoothukudi. International Journal of Food and Nutritional Sciences, 11(12), 2613–2632. https://ijfans.org/index.php/Journal/article/view/13095
7. International Labour Organization. (2023). Women and men in the informal economy: A statistical update. International Labour Office. ILO official website.
8. Sivagama Shunmuga Sundari, K., et al. (2020). A study on problems faced by the women workers at salt pan in Thoothukudi. Studies in Indian Place Names, 40(40).