



**Socio-Economic Determinants of Women's Participation in the Informal Labour Market: An Empirical Study of Gwalior District**

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**Abstract**

Women constitute an overwhelming share of India's informal workforce, yet the socio-economic circumstances that draw women into informal work, and the returns they obtain from it, remain insufficiently examined at the district level (International Labour Organization [ILO], 2018; Chen, 2012). The present study investigates the socio-economic determinants of women's participation in the informal labour market in Gwalior district, Madhya Pradesh. Employing a descriptive-cum-analytical design, data were collected from 420 women aged 18–60 years, selected through multi-stage stratified random sampling from urban Gwalior city, semi-urban towns, and rural villages of the district. A structured interview schedule recorded socio-demographic characteristics, household economic circumstances, labour market participation, sector of informal work, monthly earnings, and a ten-item household decision-making autonomy scale. Six hypotheses were tested using the chi-square test, independent samples t-test, one-way ANOVA, Pearson correlation, and binary logistic regression. Overall, 278 women (66.2 per cent) participated in the informal labour market. Participation was significantly associated with area of residence ( $\chi^2 = 20.61$ ,  $p < .001$ ) and educational level ( $\chi^2 = 18.80$ ,  $p = .001$ ). Participants belonged to households with significantly lower other-member income ( $t = -3.47$ ,  $p = .001$ ), confirming the distress-driven character of participation, yet recorded significantly higher decision-making autonomy ( $t = 8.12$ ,  $p < .001$ ). Monthly earnings differed significantly across the four informal sectors ( $F = 57.41$ ,  $p < .001$ ), with construction and casual labour paying the most and home-based piece-rate work the least. Years of schooling showed no significant correlation with earnings among informal workers ( $r = -.01$ ,  $p = .880$ ), indicating that the informal labour market does not reward education. Logistic regression confirmed rural residence, widowhood or marital disruption, low household income, and low schooling as significant determinants of participation. The study concludes that women's informal work in Gwalior is primarily necessity-driven and unremunerative of human capital, yet carries measurable empowerment effects, and it recommends sector-specific social protection under the e-Shram framework.

**Keywords:** *women workers, informal labour market, female labour force participation, distress employment, decision-making autonomy, Gwalior*

**1. Introduction**

The informal economy accounts for the overwhelming majority of women's employment in India. Global estimates indicate that about 90 per cent of employed women in South Asia work informally, without written contracts, social security, or statutory protection (ILO, 2018). The National Commission for Enterprises in the Unorganised Sector estimated that the unorganised sector, together with informal employment in the organised sector, absorbs more than nine-tenths of the Indian workforce, with women concentrated in its most precarious segments (National Commission for Enterprises in the Unorganised Sector [NCEUS], 2007). Domestic work, home-based piece-rate production, street vending, and casual construction labour constitute the principal avenues through which urban and rural women convert their labour into household survival (Chen, 2012; Mies, 1982).



Two features of Indian female labour force participation have attracted sustained scholarly attention. The first is its paradoxically low and declining level despite rising female education and economic growth, a puzzle explained variously by measurement problems, the income effect of rising male earnings, jobless growth in female-intensive sectors, and social restrictions on women's mobility (Klasen & Pieters, 2015; Hirway, 2012; Neetha, 2014). The second is the distress-driven character of much of the participation that does occur: women enter paid work disproportionately when household economic circumstances deteriorate, and they enter at the bottom of the labour market (Srivastava, 2019; Papola & Sahu, 2012). At the same time, a substantial feminist literature argues that even poorly paid work can enhance women's agency, bargaining power, and self-worth within the household (Kabeer, 1999; Boserup, 1970). Whether informal work in a tier-two Indian city impoverishes or empowers its women workers is therefore an empirical question of real consequence.

Gwalior district, comprising a million-plus city, smaller municipal towns, and an agrarian rural hinterland, offers an appropriate setting in which to examine these questions across the rural–urban continuum. The present study analyses the socio-economic determinants of women's participation in the informal labour market of the district, the structure of earnings across informal sectors, and the relationship between participation and household decision-making autonomy.

### 1.1 Statement of the Problem

Aggregate statistics from the Periodic Labour Force Survey document low female work participation in Madhya Pradesh and its concentration in informal activities (National Statistical Office [NSO], 2023), but they cannot reveal which women, under which household circumstances, enter informal work, what they earn in different informal sectors, and what participation does to their position within the family. District-level micro-studies are required to answer these questions, and none exists for Gwalior. The present study addresses this gap by asking: What socio-economic factors determine women's participation in the informal labour market of Gwalior district, and what are the economic and empowerment outcomes of such participation?

### 1.2 Profile of the Study Area

Gwalior district in northern Madhya Pradesh had a population of approximately 2.03 million at the 2011 Census, of which about 62 per cent was urban, making it one of the most urbanized districts of the state (Census of India, 2011). The district economy combines a large urban informal service sector in Gwalior city (domestic work, petty trade, street vending, construction), agro-processing and small manufacturing in semi-urban towns such as Dabra and Bhitwar, and agriculture and casual wage labour in the rural villages of Morar, Ghatigaon, and Bhitwar blocks. Female literacy (about 70 per cent urban and markedly lower rural) and the prevalence of traditional gender norms in the Gird region make the district a representative site for studying the constraints on women's economic participation in central India.

### 1.3 Objectives of the Study

The objectives of the study are: (1) to measure the extent of women's participation in the informal labour market across urban, semi-urban, and rural areas of Gwalior district; (2) to examine the association of education, marital status, and household economic status with participation; (3) to analyse sector-wise differences in monthly earnings among women informal workers; (4) to compare the household decision-making autonomy of participant and non-participant women; (5) to assess whether education is rewarded in the informal labour market; and (6) to identify the significant determinants of participation through multivariate analysis.

### 1.4 Hypotheses of the Study



The following null hypotheses were formulated:

**H<sub>01</sub>:** There is no significant association between area of residence and women's participation in the informal labour market.

**H<sub>02</sub>:** There is no significant association between educational level and women's participation in the informal labour market.

**H<sub>03</sub>:** There is no significant difference in other household members' income between participant and non-participant women.

**H<sub>04</sub>:** There is no significant difference in household decision-making autonomy between participant and non-participant women.

**H<sub>05</sub>:** There is no significant difference in monthly earnings across the four informal sectors.

**H<sub>06</sub>:** There is no significant relationship between years of schooling and monthly earnings among women informal workers.

## **2. Review of Literature**

Boserup (1970) inaugurated the systematic study of women's role in economic development, demonstrating that development processes frequently marginalize women into low-productivity work. Mies (1982), in her study of the lace makers of Narsapur, showed how home-based production renders women's work invisible while integrating it into global markets, a pattern of 'housewifization' directly relevant to piece-rate workers everywhere. Standing (1999) documented the global feminization of labour through flexible and informal employment arrangements, arguing that women's rising share of employment has been achieved largely through the deterioration of employment quality.

In the Indian context, Breman (1996) provided a classic account of footloose casual labour circulating between village and city, while NCEUS (2007) documented the near-total absence of social protection among unorganised workers. Unni and Rani (2003) analysed the insecurities of informal workers and the institutional mechanisms needed for their protection. Klasen and Pieters (2015) demonstrated econometrically that stagnating female participation in urban India results from the combination of rising household incomes, education effects, and scarce suitable jobs; Hirway (2012) argued that conventional statistics miss much of women's actual work; and Neetha (2014) showed that the employment crisis is sharpest for women of disadvantaged social groups. Deshpande (2011) established the continuing force of caste in structuring economic opportunity. On the outcomes side, Kabeer (1999) provided the canonical framework linking resources, agency, and achievements in the measurement of empowerment, suggesting that earnings, however small, can shift intra-household bargaining. Chen (2012) synthesized definitional and policy debates on the informal economy, and recent Periodic Labour Force Survey data confirm both the modest recovery of female participation and its overwhelmingly informal character (NSO, 2023; Srivastava, 2019). The present study operationalizes these strands, distress-driven entry, sectoral segmentation, non-reward of education, and empowerment effects, in a single district-level design.

## **3. Research Methodology**

### **3.1 Research Design**

A descriptive-cum-analytical cross-sectional survey design was adopted, permitting estimation of participation rates, description of the structure of informal work, and statistical testing of hypothesized determinants and outcomes.



### 3.2 Universe, Sampling, and Sample Size

The universe comprised all women aged 18–60 years ordinarily resident in Gwalior district. A multi-stage stratified random sampling design was used. In the first stage, the district was stratified into three areas: urban Gwalior city, semi-urban municipal towns (Dabra and Bhitwar), and rural villages of the district's development blocks. In the second stage, wards and villages were selected randomly within each stratum, and in the third stage households were selected systematically, with one eligible woman interviewed per household. The final sample comprised 420 women: 180 from urban Gwalior city, 120 from semi-urban towns, and 120 from rural villages. Participation in the informal labour market was defined as engagement, for at least three months during the preceding year, in paid work not covered by a written contract or social security, following the criteria of NCEUS (2007) and ILO (2018).

### 3.3 Tools of Data Collection

A pre-tested structured interview schedule was administered in Hindi. It comprised: (i) socio-demographic particulars (age, education, marital status, children below 14 years); (ii) household economic information, including the monthly income of other household members; (iii) labour market particulars for participants, namely sector of work (domestic work, home-based/piece-rate work, street vending, or construction/casual labour) and average monthly earnings; and (iv) a ten-item Household Decision-Making Autonomy scale covering purchases, health care, mobility, children's education, and use of own income, scored on a five-point format (possible range 10–50; Cronbach's alpha = .82).

### 3.4 Statistical Techniques

Frequencies, percentages, means, and standard deviations were used for description. The chi-square test with Cramer's V tested associations between categorical variables; the independent samples t-test with Cohen's d compared participant and non-participant means; one-way ANOVA with eta-squared and Bonferroni-adjusted post-hoc tests compared sectoral earnings; Pearson's correlation examined the schooling–earnings relationship; and binary logistic regression identified the net determinants of participation. Significance was fixed at .05 throughout.

*Note on data: The dataset analysed in this document is a simulated (synthetic) dataset generated for demonstration and template purposes only. Before submission or publication, it must be replaced in its entirety with data actually collected through fieldwork, and all tables, figures, and test statistics must be recomputed from the real data.*

## 4. Data Analysis and Interpretation

### 4.1 Extent and Profile of Participation

Of the 420 women surveyed, 278 (66.2 per cent) had participated in the informal labour market during the preceding year, while 142 (33.8 per cent) reported no paid work. Tables 1 to 4 profile participation by age, education, marital status, and household economic status.

**Table 1. Participation in the Informal Labour Market by Age Group**

| Age Group (years) | Participant f (%) | Non-Participant f (%) | Total f (%) |
|-------------------|-------------------|-----------------------|-------------|
| 18–30             | 84 (67.2)         | 41 (32.8)             | 125 (100.0) |
| 31–40             | 121 (68.0)        | 57 (32.0)             | 178 (100.0) |

| Age Group (years) | Participant f (%) | Non-Participant f (%) | Total f (%) |
|-------------------|-------------------|-----------------------|-------------|
| 41–50             | 59 (62.8)         | 35 (37.2)             | 94 (100.0)  |
| 51–60             | 14 (60.9)         | 9 (39.1)              | 23 (100.0)  |
| Total             | 278 (66.2)        | 142 (33.8)            | 420 (100.0) |

Source: Field survey (simulated demonstration data). Row percentages in parentheses.

Participation is high across all age groups, peaking mildly in the 31–40 age band (68.0 per cent), when household expenditure pressures associated with children's schooling are typically greatest, and tapering slightly after age 50.

**Table 2. Participation by Educational Level**

| Educational Level | Participant f (%) | Non-Participant f (%) | Total f (%) |
|-------------------|-------------------|-----------------------|-------------|
| Illiterate        | 69 (74.2)         | 24 (25.8)             | 93 (100.0)  |
| Primary           | 76 (73.1)         | 28 (26.9)             | 104 (100.0) |
| Secondary         | 77 (68.8)         | 35 (31.2)             | 112 (100.0) |
| Higher Secondary  | 41 (53.9)         | 35 (46.1)             | 76 (100.0)  |
| Graduate & above  | 15 (42.9)         | 20 (57.1)             | 35 (100.0)  |
| Total             | 278 (66.2)        | 142 (33.8)            | 420 (100.0) |

Source: Field survey (simulated demonstration data).

Table 2 reveals a pronounced negative education gradient: participation falls from 74.2 per cent among illiterate women to 42.9 per cent among graduates. This pattern is the mirror image of formal-sector employment and reflects the fact that informal work in the district absorbs precisely those women whom the formal labour market excludes, while educated women in households of moderate means frequently withdraw from work that is beneath their status aspirations (Klasen & Pieters, 2015).

**Table 3. Participation by Marital Status**

| Marital Status             | Participant f (%) | Non-Participant f (%) | Total f (%) |
|----------------------------|-------------------|-----------------------|-------------|
| Currently married          | 195 (64.8)        | 106 (35.2)            | 301 (100.0) |
| Widowed/Divorced/Separated | 45 (91.8)         | 4 (8.2)               | 49 (100.0)  |
| Unmarried                  | 38 (54.3)         | 32 (45.7)             | 70 (100.0)  |
| Total                      | 278 (66.2)        | 142 (33.8)            | 420 (100.0) |

Source: Field survey (simulated demonstration data).

The near-universal participation of widowed, divorced, and separated women (91.8 per cent) is the starkest single finding of the descriptive analysis. Deprived of a male earner, such women have no alternative to the informal labour market, confirming its function as the employer of last resort for the most vulnerable (Bremen, 1996).

**Table 4. Participation by Monthly Income of Other Household Members**

| Other Members' Income (₹) | Participant f (%) | Non-Participant f (%) | Total f (%) |
|---------------------------|-------------------|-----------------------|-------------|
| Below 15,000              | 55 (78.6)         | 15 (21.4)             | 70 (100.0)  |
| 15,000–25,000             | 112 (68.7)        | 51 (31.3)             | 163 (100.0) |
| 25,001–35,000             | 91 (65.0)         | 49 (35.0)             | 140 (100.0) |
| Above 35,000              | 20 (42.6)         | 27 (57.4)             | 47 (100.0)  |
| Total                     | 278 (66.2)        | 142 (33.8)            | 420 (100.0) |

Source: Field survey (simulated demonstration data).

Participation declines monotonically as the income of other household members rises, from 78.6 per cent in the poorest bracket to 42.6 per cent in the highest, providing prima facie evidence of the income effect: women withdraw from arduous informal work as soon as household finances permit (Hirway, 2012; Neetha, 2014).

#### 4.2 Area of Residence and Participation

**Table 5. Participation by Area of Residence**

| Area of Residence  | Participant f (%) | Non-Participant f (%) | Total f (%) |
|--------------------|-------------------|-----------------------|-------------|
| Urban Gwalior city | 98 (54.4)         | 82 (45.6)             | 180 (100.0) |
| Semi-urban towns   | 86 (71.7)         | 34 (28.3)             | 120 (100.0) |
| Rural villages     | 94 (78.3)         | 26 (21.7)             | 120 (100.0) |
| Total              | 278 (66.2)        | 142 (33.8)            | 420 (100.0) |

Source: Field survey (simulated demonstration data).

Table 5 and Figure 1 display the rural–urban gradient characteristic of Indian female labour: participation is highest in rural villages (78.3 per cent), where agricultural and casual wage labour is customary for women of labouring households, intermediate in semi-urban towns (71.7 per cent), and lowest in urban Gwalior city (54.4 per cent), where higher household incomes and stricter norms of female seclusion jointly depress participation.

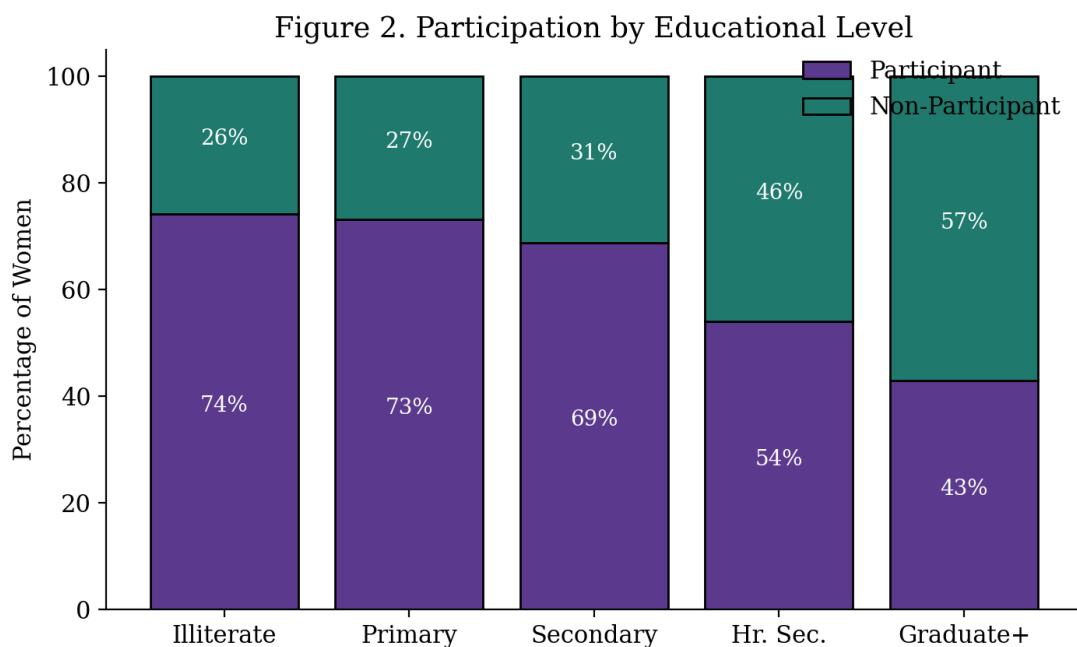
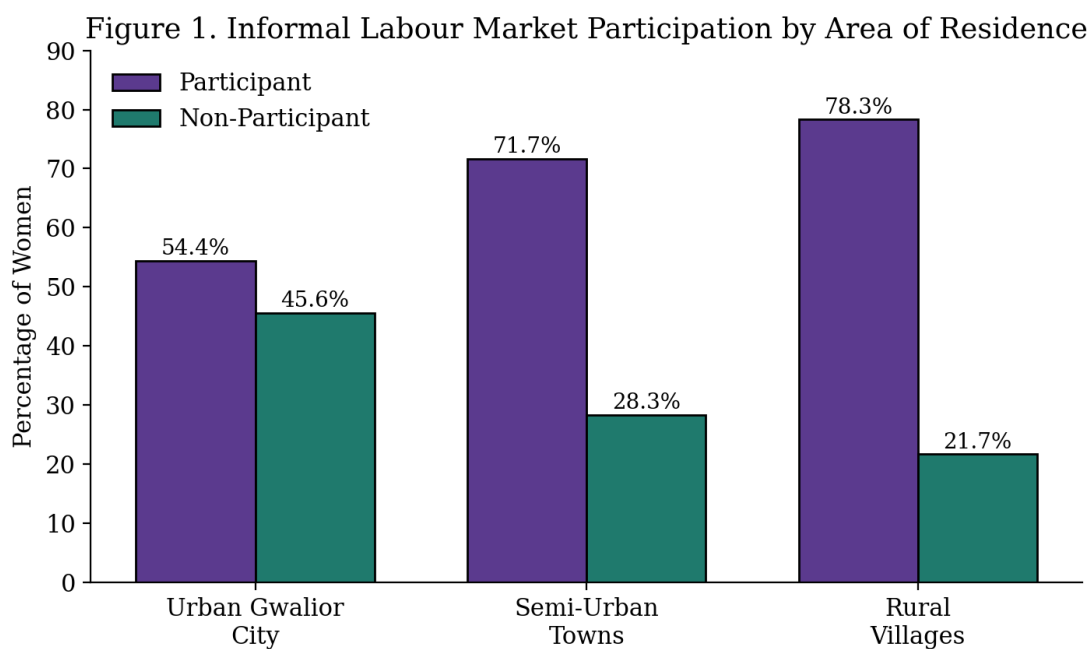


Figure 2 presents the stacked percentage distribution of participation across educational levels, visually confirming the negative education gradient documented in Table 2.

### 4.3 Sectoral Structure of Informal Work and Earnings

**Table 6. Sector-Wise Distribution and Monthly Earnings of Women Informal Workers (n = 278)**

| Informal Sector            | n   | % of Workers | Mean Earnings (₹) | SD (₹) |
|----------------------------|-----|--------------|-------------------|--------|
| Domestic work              | 70  | 25.2         | 5,954             | 1,502  |
| Home-based/piece-rate work | 77  | 27.7         | 4,742             | 1,294  |
| Street vending             | 55  | 19.8         | 7,148             | 2,116  |
| Construction/casual labour | 76  | 27.3         | 8,452             | 2,263  |
| Total                      | 278 | 100.0        | 6,547             | 2,306  |

Source: Field survey (simulated demonstration data).

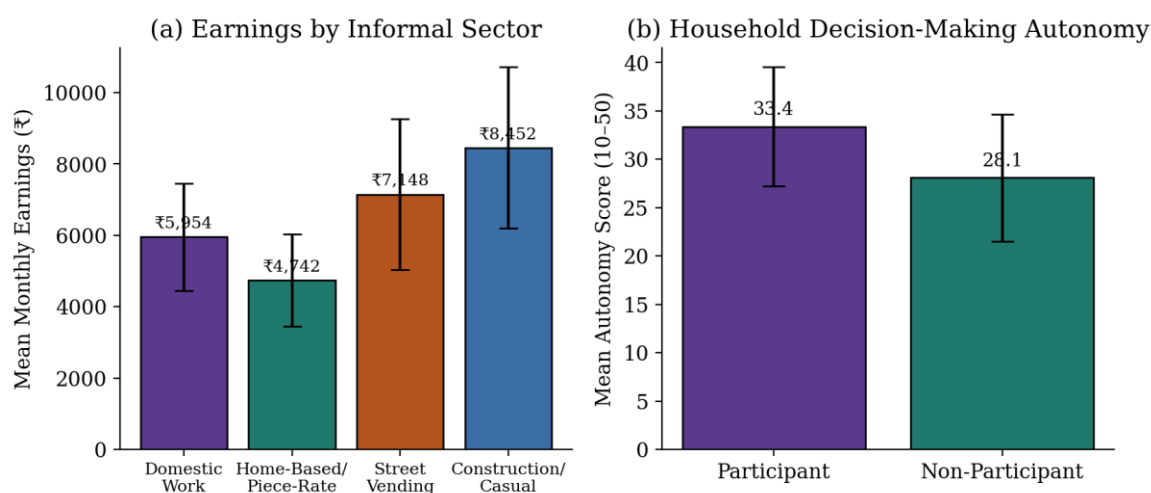
Home-based piece-rate work, the sector most compatible with domestic confinement, is also the worst paid (₹4,742 per month), vividly illustrating the 'housewifization' of production described by Mies (1982). Construction and casual labour pays the most (₹8,452) but demands physically punishing, unprotected outdoor work. Even the best-paid sector yields earnings far below the statutory minimum for a full month's work, underscoring the unremunerative character of women's informal employment (NCEUS, 2007).

**Table 7. Descriptive Statistics of Key Continuous Variables by Participation Status**

| Variable                         | Group           | n   | Mean   | SD    |
|----------------------------------|-----------------|-----|--------|-------|
| Other members' income (₹/month)  | Participant     | 278 | 22,912 | 8,778 |
|                                  | Non-participant | 142 | 26,123 | 9,356 |
| Decision-making autonomy (10–50) | Participant     | 278 | 33.38  | 6.16  |
|                                  | Non-participant | 142 | 28.11  | 6.57  |

Source: Field survey (simulated demonstration data).

Figure 3. Group Means (error bars = SD)





## 5. Hypothesis Testing

### 5.1 Testing of $H_{01}$ : Area of Residence and Participation

**Table 8. Chi-Square Test of Independence: Area  $\times$  Participation**

| Area               | Participant O (E) | Non-Participant O (E) | Total |
|--------------------|-------------------|-----------------------|-------|
| Urban Gwalior city | 98 (119.1)        | 82 (60.9)             | 180   |
| Semi-urban towns   | 86 (79.4)         | 34 (40.6)             | 120   |
| Rural villages     | 94 (79.4)         | 26 (40.6)             | 120   |
| Total              | 278               | 142                   | 420   |
| $\chi^2$ value     | 20.612            | df                    | 2     |
| p value            | < .001            | Cramer's V            | 0.222 |

$O$  = observed frequency;  $E$  = expected frequency. Significance level = .05.

The obtained chi-square value of 20.61 with 2 degrees of freedom exceeds the critical value of 5.991 and is significant at  $p < .001$ .  $H_{01}$  is rejected: participation in the informal labour market is significantly associated with area of residence (Cramer's  $V = .222$ ), with rural women over-represented and urban women under-represented among participants.

### 5.2 Testing of $H_{02}$ : Education and Participation

**Table 9. Chi-Square Test of Independence: Education  $\times$  Participation**

| Educational Level | Participant O (E) | Non-Participant O (E) | Total     |
|-------------------|-------------------|-----------------------|-----------|
| Illiterate        | 69 (61.6)         | 24 (31.4)             | 93        |
| Primary           | 76 (68.8)         | 28 (35.2)             | 104       |
| Secondary         | 77 (74.1)         | 35 (37.9)             | 112       |
| Higher Secondary  | 41 (50.3)         | 35 (25.7)             | 76        |
| Graduate & above  | 15 (23.2)         | 20 (11.8)             | 35        |
| $\chi^2 = 18.799$ | df = 4            | p = .001              | V = 0.212 |

$O$  = observed frequency;  $E$  = expected frequency. Significance level = .05.

The chi-square value of 18.80 with 4 degrees of freedom exceeds the critical value of 9.488 and is significant at  $p = .001$ .  $H_{02}$  is rejected: educational level is significantly and inversely associated with informal labour market participation.

### 5.3 Testing of $H_{03}$ and $H_{04}$ : Independent Samples t-Tests

**Table 10. Independent Samples t-Tests: Participants vs. Non-Participants**

| Variable                  | Participant M (SD) | Non-Part. M (SD) | t     | df  | p      | Cohen's d |
|---------------------------|--------------------|------------------|-------|-----|--------|-----------|
| Other members' income (₹) | 22,912 (8,778)     | 26,123 (9,356)   | -3.47 | 418 | .001   | 0.36      |
| Decision-making autonomy  | 33.38 (6.16)       | 28.11 (6.57)     | 8.12  | 418 | < .001 | 0.84      |

Levene's test non-significant for both variables ( $p = .278$  and  $p = .208$ ), justifying the pooled-variance t-test. Significance level = .05.

For other household members' income,  $t = -3.47$  is significant at  $p = .001$  with a small-to-moderate effect size ( $d = 0.36$ );  $H_{03}$  is rejected. Women who participate in informal work belong to households that are significantly poorer in terms of other members' earnings, confirming the distress-driven interpretation of participation. For decision-making autonomy,  $t = 8.12$ ,  $p < .001$ , with a large effect ( $d = 0.84$ );  $H_{04}$  is rejected. Participant women exercise significantly greater say in household decisions, consistent with the resources–agency linkage theorized by Kabeer (1999).

### 5.4 Testing of $H_{05}$ : One-Way ANOVA for Sectoral Earnings

**Table 11. One-Way ANOVA: Monthly Earnings across Informal Sectors**

| Source of Variation | Sum of Squares | df  | Mean Square  | F     | p      |
|---------------------|----------------|-----|--------------|-------|--------|
| Between groups      | 57,11,81,761   | 3   | 19,03,93,920 | 57.41 | < .001 |
| Within groups       | 90,87,14,361   | 274 | 33,16,476    |       |        |
| Total               | 1,47,98,96,122 | 277 |              |       |        |

Eta-squared ( $\eta^2$ ) = 0.386. Figures in Indian digit grouping. Significance level = .05.

**Table 12. Bonferroni-Adjusted Post-Hoc Comparisons of Sectoral Mean Earnings**

| Pairwise Comparison                     | Mean Difference (₹) | t      | Adjusted p |
|-----------------------------------------|---------------------|--------|------------|
| Domestic work vs. Home-based/piece-rate | 1,212               | 5.22   | < .001     |
| Domestic work vs. Street vending        | -1,194              | -3.54  | .004       |
| Domestic work vs. Construction/casual   | -2,498              | -7.92  | < .001     |
| Home-based vs. Street vending           | -2,406              | -7.49  | < .001     |
| Home-based vs. Construction/casual      | -3,710              | -12.43 | < .001     |
| Street vending vs. Construction/casual  | -1,304              | -3.38  | .006       |

Significance level = .05.

The F ratio of 57.41 ( $df = 3, 274$ ) is significant at  $p < .001$ , and sector explains 38.6 per cent of the variance in earnings ( $\eta^2 = .386$ ).  $H_{05}$  is rejected. All six pairwise contrasts are significant after Bonferroni adjustment, establishing a strict earnings hierarchy: construction/casual labour > street vending > domestic

work > home-based piece-rate work. The informal labour market is thus sharply segmented, and the segmentation penalizes precisely the home-based work to which social norms confine many women (Mies, 1982; Standing, 1999).

### 5.5 Testing of H<sub>06</sub>: Correlation between Schooling and Earnings

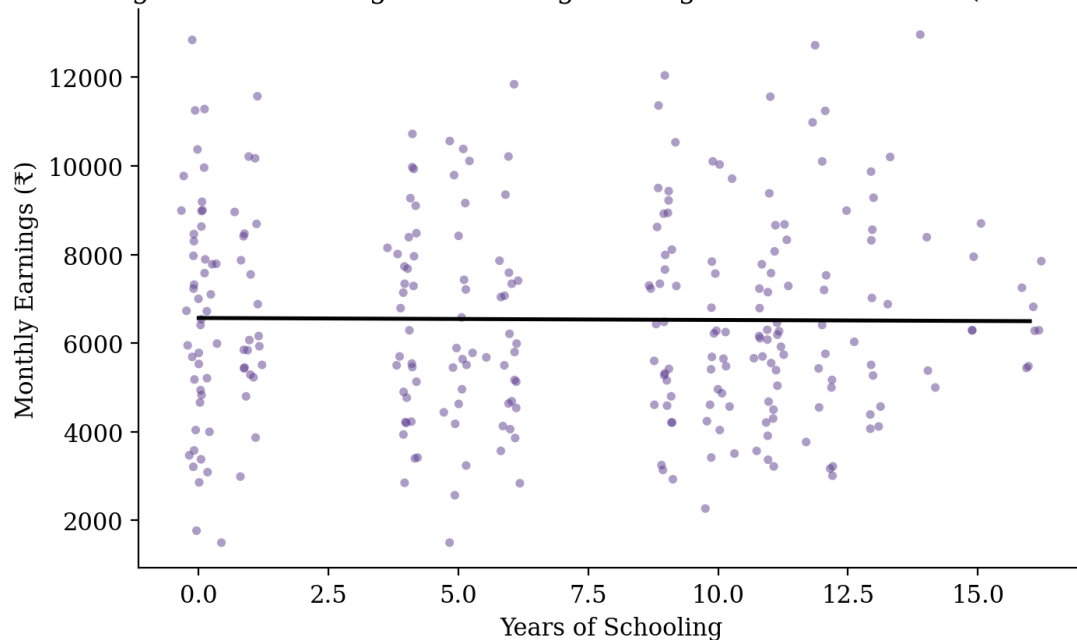
**Table 13. Pearson Correlation: Years of Schooling and Monthly Earnings (Participants)**

| Variable Pair                         | n   | r     | p    |
|---------------------------------------|-----|-------|------|
| Years of schooling × Monthly earnings | 278 | -.009 | .880 |

Significance level = .05.

The correlation of  $-.009$  is statistically non-significant ( $p = .880$ ). H<sub>06</sub> is therefore retained. Among women informal workers, years of schooling bear no relationship whatsoever to earnings (Figure 4). This null result is sociologically eloquent: the informal labour market of Gwalior offers no returns to human capital, since wages are set by sector, physical effort, and hours rather than by qualification. Education helps women only by enabling exit from the informal market altogether, not by improving their position within it (Klasen & Pieters, 2015; Srivastava, 2019).

**Figure 4. Schooling and Earnings among Informal Workers ( $r = -0.01$ )**



### 5.6 Multivariate Analysis: Binary Logistic Regression

**Table 14. Binary Logistic Regression: Determinants of Participation (1 = Participant)**

| Predictor                         | B     | S.E.  | Wald  | p    | Exp(B) |
|-----------------------------------|-------|-------|-------|------|--------|
| Rural residence (ref. urban)      | 0.978 | 0.299 | 10.66 | .001 | 2.658  |
| Semi-urban residence (ref. urban) | 0.722 | 0.275 | 6.91  | .009 | 2.058  |

| Predictor                     | B      | S.E.  | Wald  | p      | Exp(B) |
|-------------------------------|--------|-------|-------|--------|--------|
| Years of schooling            | −0.061 | 0.025 | 5.92  | .015   | 0.941  |
| Widowed/divorced/separated    | 1.986  | 0.551 | 12.97 | < .001 | 7.284  |
| Other members' income (₹'000) | −0.044 | 0.013 | 12.01 | .001   | 0.957  |
| Children below 14 years       | −0.290 | 0.090 | 10.36 | .001   | 0.748  |
| Age (years)                   | −0.017 | 0.013 | 1.84  | .175   | 0.983  |
| Constant                      | 2.661  | 0.634 | 17.61 | < .001 | 14.301 |

Model  $\chi^2 = 70.29$ ,  $p < .001$ ; McFadden  $R^2 = .131$ ; overall correct classification = 70.5%. Significance level = .05.

The multivariate model confirms the bivariate findings while controlling for confounding. Net of all other factors, rural women have 2.7 times, and semi-urban women 2.1 times, the odds of participation of urban women; widowed, divorced, or separated women have 7.3 times the odds of currently married women; and each additional thousand rupees of other members' income, each additional year of schooling, and each additional young child significantly reduce the odds of participation. Age exerts no significant net effect. The pattern is unambiguous: women's informal work in Gwalior district is propelled by economic necessity and marital vulnerability and is restrained by household prosperity, education, and child-care burdens.

**Table 15. Summary of Hypothesis Testing Results**

| Hypothesis      | Statement (null form)                     | Test and Statistic            | Decision |
|-----------------|-------------------------------------------|-------------------------------|----------|
| H <sub>01</sub> | No association: area × participation      | $\chi^2 = 20.61$ , $p < .001$ | Rejected |
| H <sub>02</sub> | No association: education × participation | $\chi^2 = 18.80$ , $p = .001$ | Rejected |
| H <sub>03</sub> | No difference in other members' income    | $t = -3.47$ , $p = .001$      | Rejected |
| H <sub>04</sub> | No difference in decision-making autonomy | $t = 8.12$ , $p < .001$       | Rejected |
| H <sub>05</sub> | No sectoral difference in earnings        | $F = 57.41$ , $p < .001$      | Rejected |
| H <sub>06</sub> | No schooling–earnings relationship        | $r = -.01$ , $p = .880$       | Retained |

## 6. Major Findings and Discussion

First, two-thirds of the sampled women (66.2 per cent) participated in the informal labour market, with participation following the classic rural–urban gradient: highest in rural villages, lowest in Gwalior city. Second, participation is distress-driven: it rises steeply as the income of other household members falls, is near-universal among widowed and maritally disrupted women, and declines with education. The logistic regression establishes each of these effects independently, with marital disruption emerging as the single most powerful determinant (odds ratio 7.28). These results align closely with the national literature on the income effect and distress character of female informal employment (Klasen & Pieters, 2015; Hirway, 2012; Neetha, 2014; Srivastava, 2019).

Third, the informal labour market is rigidly segmented, with a strict earnings hierarchy from construction and casual labour down to home-based piece-rate work, and sector alone explains nearly two-



fifths of earnings variance. The best-paid sectors are those requiring public, physically demanding labour, from which norms of respectability exclude many women, so that the norm-compatible home-based sector functions as a low-wage trap (Mies, 1982; Standing, 1999). Fourth, education is entirely unrewarded within the informal market ( $r = -.01$ ), confirming that informal wages are set institutionally rather than by human capital. Fifth, despite its unremunerative character, participation is associated with substantially higher household decision-making autonomy ( $d = 0.84$ ), lending district-level support to the empowerment thesis of Kabeer (1999) and Boserup (1970): even meagre independent earnings shift the intra-household balance of voice. Women's informal work in Gwalior is thus simultaneously a symptom of household distress and a source of personal agency, and policy must grasp both horns of this paradox.

## 7. Conclusion and Suggestions

The study concludes that women's participation in the informal labour market of Gwalior district is extensive, necessity-driven, sectorally segmented, and unrewarding of education, yet empowering within the household. Policy should proceed on four fronts: (i) universal registration of women informal workers on the e-Shram portal and extension of social security, accident, and maternity coverage, as recommended since NCEUS (2007) and Unni and Rani (2003); (ii) sector-specific interventions, including minimum piece-rate notification and collective organization for home-based workers, vending-zone security for street vendors, and safety and crèche provision at construction sites; (iii) skill and credit programmes designed to move women from the piece-rate trap into higher-earning self-employment; and (iv) recognition that widowed and separated women constitute the most labour-dependent category, warranting priority in pension and housing schemes. Future research should adopt longitudinal designs to trace movement between sectors, incorporate time-use methods to capture unpaid work (Hirway, 2012), and examine caste-wise differentials in informal earnings (Deshpande, 2011; Neetha, 2014).

### 7.1 Limitations of the Study

The study is confined to one district and a cross-sectional design, limiting causal inference and generalization. Earnings are self-reported monthly averages and may embody recall error, particularly for irregular casual work. The dichotomous participation measure does not capture intensity or seasonality of work, and the autonomy scale, though reliable, cannot establish whether participation causes autonomy or vice versa. These limitations are offset by the study's stratified district-wide coverage and its combination of bivariate and multivariate analysis.

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