



Geographic Disparities: A Statistical Examination of Income Variance Among Women Workers in the Carpet Industry in Bhadohi district

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Abstract : The carpet industry exhibits a pronounced demand for physical labour, with a substantial component of its workforce comprised of marginalised ethnic communities who face unemployment and lack formal education. The job in the carpet business is temporary. A substantial proportion of farmers are engaged in this business. Thus, it enables the efficient redistribution of surplus workforce from agricultural industries. Carpet weaving is an ideal career for persons living in rural regions inside cities and for female workers, as it does not need strenuous physical labour. The workforce is heterogeneous, with individuals from many castes and familial backgrounds, each possessing varying levels of aptitude and wealth. A survey was undertaken in the Bhadohi region to investigate regional differences in income among female workers employed in the carpet industry. For this study, a sample of 350 female employees was selected from 30 carpet manufacturing businesses in the Bhadohi area. For this stratified random sampling is used. Study has revealed a notable disparity in pay among female employees as a result of the distance between their residence and workplace. This article reveals that the geographical location of the workplace significantly influences the income levels of female workers. Individuals residing in rural regions who must commute to metropolitan hubs for employment may have supplementary obstacles or expenditures, such as transit fees or extended commuting durations.

Keywords - Geographic, Disparities, Statistical, Examination, Income, Variance, Among, Women, Workers, Carpet, Industry, Bhadohi.

Introduction: Akbar, the Mughal the king, is credited with introducing pile carpets to India, hence commencing the nation's distinguished tradition of carpet weaving. Indian carpets gained prominence during the reigns of emperors Jahangir and Shahjahan, as they commissioned the manufacturing of gorgeous carpets across their empire. Gradually, carpets gained popularity among not just the aristocracy but also the general populace and the middle class. As a result, the industry experienced a boost in quality due to the addition of unique designs and vibrant colours crafted by skilled weavers who transformed into artists. The traditional carpet industry in India has a rich history spanning 400 years and is renowned worldwide for its proficient

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weavers, who possess exceptional versatility, talent, and the ability to fulfil commercial demands (Yasmin and Bhat, 2013). The carpet weaving industry in India has flourished as one of the most ancient human-created enterprises, renowned for its labor-intensive characteristics and significant impact on the handicraft sector, particularly in the development of rural areas. The sector primarily concentrates on exporting its products, sustaining the incomes of about 2.5 million artisans, and generating substantial foreign exchange earnings. Exports exceeded \$1081 million in the year 2012-13. Following the deregulation of the Indian economy, the carpet sector in India has experienced substantial and swift growth, especially after the liberalisation period. The export of hand-knotted carpets has experienced significant increase, representing 80 percent of the overall carpet exports. India holds a significant position in the global carpet business, accounting for 35 percent of the total worldwide carpet exports. The company distributes carpets to over 70 countries, including prominent markets like the United States and the European Union. Together, these two locations provide a significant portion of India's carpet exports. In 2010, the Bhadohi district was granted the Geographical Indication (GI) designation. The Bhadohi handmade carpet is renowned globally. The districts of Bhadohi, Mirzapur, Allahabad, Varanasi, Jaunpur, Sonbhadra, Kaushambi, and Chandauli would be designated as the "handmade carpet of Bhadohi".

Review of literature: Majeed, I. & Swalehin, M., (2021) shows the exploitation faced by weavers due to middlemen, low earnings, and long working hours, indicating significant challenges within the sector. Further they said Piece-wage serves as a means of surplus extraction for capitalists in this industry.

Saudagar Heena, Zeeshan Mohammad and Sharma Shrikant, (2017) in their study "Women's Decision Making and Mobility in the Carpet Industry: A Case Study of Bhadohi District" utilised a decision-making index to assess the level of empowerment among adult females involved in the carpet business. This indicator incorporates decision-making authority, socio-economic characteristics, and demographic considerations, among other aspects. It has been shown that adult females working in the carpet sector possess a limited level of decision-making authority. This indicates the inadequate empowering of female workers in the carpet sector.

Shazli Tasneem and Munir Abdul (2014), "Female Work Participation in Handloom Industry: A Case study of Mubarakpur Town Azamgarh District" utilised primary data obtained through questionnaires. It found that weaving is the predominant employment in Mubarakpur town due to the significant presence of handlooms. The primary factors compelling individuals to engage in handloom work are economic need, unemployment, poverty, little income, limited literacy, and high family size.

Hansen and Rosell, (2012) have analysed that according to industry estimates 90% of carpet weaving occurred in household using family labour and only 10% of the looms were operated by hired workers in factories, many of factories were small and most shed owners were not wealthy and they owned only a small number of looms and employed a handful of workers including children. The base of the industry's socio-economic structure was the individual weaver at a loom, but the exporter and largest manufacturers at the top were usually separated them from weaver by layers of middlemen.

Objective:

To examine statistically significant variance in income among the women workers in the carpet industry based on their respective locations.

Hypothesis:

H0: There is no significant difference between income and location of workers in the carpet industry.

H1: There is significant difference between income and location of workers in the carpet industry.

Research methodology: The current study predominantly utilises primary data sources, acquired through extensive field surveys done in the region. The data was obtained by direct interrogation of the workers. Field surveys were undertaken in June 2023. The survey was carried out at designated carpet manufacturing facilities situated in six sectors of the Bhadohi district. A sample of 30 units was selected using stratified random sampling. A total of 350 female employees were surveyed in order to collect data regarding their earnings and the proximity of their employment. An organised interview schedule was used to gather primary data from female employees at carpet manufacturing plants. Tables may simplify the process of gathering and inputting data. The data is analysed using appropriate econometric and statistical techniques, such as ANOVA. The SPSS software, acronym for Special Packages for Statistical Software, has been employed for running ANOVA testing.

The formula for calculating the F- statistics in one way ANOVA:

F=between group variability/within group variability

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Squares (MS)	F
Within	$SSW = \sum_{j=1}^k \sum_{i=1}^l (X_{ij} - \bar{X}_j)^2$	$df_w = k - 1$	$MSW = \frac{SSW}{df_w}$	$F = \frac{MSB}{MSW}$
Between	$SSB = \sum_{j=1}^k (\bar{X}_j - \bar{X})^2$	$df_b = n - k$	$MSB = \frac{SSB}{df_b}$	
Total	$SST = \sum_{j=1}^n (X_j - \bar{X})^2$	$df_t = n - 1$		

Block wise distribution of weavers

Table 1: Block wise distribution of women workers in the carpet industry:

Block	No. of Respondent
Gyanpur	60
Bhadohi	80
Surinyawa	50
Digh	45
Abholi	45
Aurai	70
Total	350

Source: data collected through field survey.

The above table 1 reveals that the Bhadohi district has 6 blocks that is Gyanpur, Bhadohi, Suriyanwa, Digh, Abholi and Aurai. In this study 80 workers which is maximum respondents are randomly taken from Bhadohi block(tahsil) because many carpet industries are established here as compare to other blocks of Bhadihi district. 70 women workers are taken from Aurai Block followed by Bhadohi district there are also many carpet industries located here. 60 women workers are taken from Gyanpur block, 50 women workers are taken from Suriyanwa block, 45 women workers are taken from Digh block and also 45 women workers are taken from Abholi block of Bhadohi district.

Income composition of women workers: The economic standing is determined by the degree of education needed to secure a job and the salary levels that varies across various occupations and within occupational hierarchies. The economic standing of an individual is determined by their work qualities, decision-making capacity, level of control, and the psychological demands placed on them in their employment. The user's text is empty. The economic position of individuals and society relies on the presence of revenue, which plays a crucial role in enhancing the socio-economic condition.

Table 2 : Monthly Income of women workers in the carpet industry of Bhadohi district.

Women workers	Income of women workers in the carpet industry.				Total
	less than 4000	4001-6000	6001-8000	above 8000	
pre weaver	32.8%	47.4%	15.5%	4.3%	100.0%
weaver	4.3%	23.6%	34.3%	37.9%	100.0%
finishing worker	28.7%	52.1%	16.0%	3.2%	100.0%
Total	20.3%	39.1%	23.1%	17.4%	100.0%

Source: data collected through field survey.

This table 2 provides a detailed overview of how the monthly income is distributed among women workers in different roles within the carpet industry in Bhadohi district. It highlights the varying income patterns across different job categories. 32.8% of pre-weaver women workers have a monthly income less than 4000. 47.4% fall in the 4001-6000 income bracket. 15.5% fall in the 6001-8000 income bracket. 4.3% have an income above 8000. 4.3% of weaver women workers earn less than 4000. 23.6% fall in the 4001-6000 income bracket. 34.3% fall in the 6001-8000 income bracket. 37.9% have an income above 8000. 37.9% have an income above 8000. 28.7% of finishing workers have a monthly income less than 4000. 52.1% fall in the 4001-6000 income bracket. 16.0% fall in the 6001-8000 income bracket. 3.2% have an income above 8000. When considering all women workers in the carpet industry, 20.3% earn less than 4000. 39.1% fall in the 4001-6000 income bracket. 23.1% fall in the 6001-8000 income bracket. 17.4% have an income above 8000. In Pre weaving and finishing workers both there are less women workers who earned above 8000 Rs. per month because the workers of this group are unskilled or semiskilled and they do not get chance to earn as like weaving workers and they do not get regularly work in a month and work less hour in a day.

Table 3 : distance from working place

Women workers	distance from work place				Total
	At home	1-2 km.	2-3 km.	more than 3 km.	
pre weaver	42.2%	29.3%	19.8%	8.6%	100.0%
weaver	45.0%	25.0%	18.6%	11.4%	100.0%
finishing worker	41.5%	29.8%	19.1%	9.6%	100.0%
Total	43.1%	27.7%	19.1%	10.0%	100.0%

Source: data collected through field survey.

The table 3 presents a crosstabulation detailing the distribution of women workers in the carpet industry based on their occupation and the distance from their workplace. The data is organized into rows representing different categories of women workers (pre-weaver, weaver, and finishing worker) and columns representing different distance intervals from the workplace (at home, 1-2 km, 2-3 km, and more than 3 km). The data indicates that the majority of women workers in the carpet industry, comprising 43.1% of the total, work from home. Following this, 27.7% of women workers are located within a distance of 1-2 km from their workplace. The percentages decrease gradually as the distance from the workplace increases, with 19.1% of women workers situated 2-3 km away and 10.0% located more than 3 km from their workplace.

Hypothesis:

H0: There is no significant difference between income and location of workers in the carpet industry.

H1: There is significant difference between income and location of workers in the carpet industry.

Table – 4 ANOVA analysis of income and location of women workers in the carpet industry.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	85.326	2	42.663	91.699	.000
Within Groups	161.442	347	.465		
Total	246.769	349			

Source – author's computed using SPSS.

The table above displays the ANOVA results between income and the location of the respondents. Since the p-value is less than 0.005, the null hypothesis is rejected, and the alternative hypothesis is accepted. There is a significant relationship between income and the location of the respondents. Hence, the researcher concludes that wherever the respondents work, it has an impact on changes in their income level. If the respondents work at home, they work more hours, and if they work on the worksite, they only work for 8 hours. So, the location has an impact on their income.

Conclusion: The paper analyses that there exists a notable distinction in income levels based on the location of women workers in the carpet industry within Bhadohi district. This implies that where these women work significantly influences the amount of income they earn. For instance, the data indicate that women who work on-sit tend to earn lower incomes compared to those who work from home. This paper reveal that women who work from home earn higher incomes due to factors such as they have more time to work but if they work on-site, they work only for 4-5 hours a day and distance from their house take time to go at the site and returning the home. Women working from working site may face limitations in terms of the volume of work they can undertake.

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