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Factors Influencing the Income of Women Weavers in Manipur

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ABSTRACT:
This study aims to analyse the factors influencing the income of the women weavers of Manipur, a state in India where weaving is a popular occupation.. The variables studied are age, marital status, education, location, category of weavers, type of looms used, training, number of families involved in weaving, method of sales, product type and experience. The data used is the primary data of 560 female weavers taken through interview methods. The data analysis method uses multiple regression analysis. The results of the study indicate that type of looms used, methods of sales, category of weavers, product type and number of family members involved in weaving have significant effects on the income of the weavers and the variables age, education, training, experience and location do not have significant impact on weavers income. The Government must impart appropriate training to the weavers so that they can weave expensive products, thereby increasing their earnings. They should initiate adequate measures to impart training for short-term courses and should bridge the requirements of marketing channels directly so that the weavers can sell more, thereby increasing their income. The government should provide loan facilities to weavers who want to undergo the adoption of technology to increase their earnings by shifting from handlooms to semi-automatic looms.

INTRODUCTION

"The handloom weaving is in a dying condition. Everybody allows that whatever may be the future of the mill sector, the handloom ought not to be allowed to perish." Mahatma Gandhi

The process of weaving is fundamental in the production of handloom textiles. It involves using a wooden frame with various devices (Vijaya et al, 2019). This method utilizes a structural apparatus to interlace fibres using different wooden mechanisms. The handloom industry is essential to India's cultural heritage and tradition, representing one of the country's oldest cottage industries with a widespread presence nationwide. It is characterized by dispersion, decentralization, lack of formal organization, and a predominantly rural base. It plays a significant role in the national economy by providing employment opportunities and contributing to export revenues (Ankam, 2016). The sector benefits from low capital intensity, minimal energy consumption, environmental sustainability, flexibility in small-scale production, openness to innovation, and adaptability to market demands.

Handloom is a form of informal, home-based, unorganized activities. The formal labor market may require formal education, but the informal labor market generally does not have rigid requirements for schooling. (Syafitri et al, 2023). The informal labor market has benefits, including flexible working hours, the chance to launch one's business, flexibility, and more job. Handloom weaving formed a part of the socio-cultural tradition of Manipur which has a rich cultural heritage. Manipur enjoys a unique place amongst textile zones in India. Unlike in the rest of India where men play an important role in weaving, it is women who are playing an active role in handloom weaving since ancient times. In almost every household, there is a loom, and traditionally, weaving was one of the criteria used in the selection of a mate, with women knowledgeable in the art being looked upon as better brides. In Manipur, the weaving occupation is dominated by women, who often perform the dual roles of producer and trader.

Significance of the Handloom sector

Indian textiles can be divided into handloom, power loom, and mill. India's merchandise exports constituted 10.5% in the fiscal year 2021-22. The textile sector in India predominantly relies on the decentralized power loom industry. With an excess of 1.942 million power looms generating approximately 19,000 million meters of fabric each year, the nation provides employment for over 7 million individuals. India ranks sixth globally in terms of textile and apparel exports. India accounts for 4% of the world's textile and apparel trade. (Ministry of Textiles Report 2021-22). Textiles, clothing, and handicrafts accounted for 11.4% of India's Exports in 2020–2. India exports textile goods to over 100 nations, including handlooms and handicrafts. The USA, EU-27, and UK collectively account for about 47% of India's textile and clothing production. Exports. (Ministry of Textiles Report 2021-22). Furthermore, India possesses a share of 4.6% of the international trade in textiles and apparel. (Ministry of Textiles Report, 2021-22).

The Fourth All India Handloom Census, 2019-20, indicates that 31.45 lakhs of the whole population of India participated in handloom activities (weaving and related activities). This indicates an increase of 13% in the number of weavers compared to the third census, which had a count of 27.83 lakhs. According to the Fourth All India Handloom Census, the total number of weavers is enumerated as 26,73,891. Of these, 18.1 lakhs that is 67.69 % of all weaver households in India are clustered in four states. The states are Assam (37.73%), Tamil Nadu (6.35 %), Manipur (7.8 %), and West Bengal

(12.7 %). Additionally, approximately 72% of weavers engaged in handloom weaving are female and 28% are male. Furthermore, 88.7% of all weaving households are located in rural regions whereas only 11.3% are in urban regions. According to 4th Handloom census Handloom Household unit are defined as those households which are primarily engaged in weaving related activities by one or more family members in the preceding year with or without proper looms in their premises.

According to the 4th Handloom census, workers are either full-time or part-time. Full-time is defined as those weavers whose sole livelihood is from handloom, and part-time is defined as those who also engaged in other economic activities apart from handlooms. Also workers are categorized into independent workers and hired workers. Independent workers are defined as individuals involved in handloom production, regardless of the nature of their engagement, who arrange the raw materials from commercial entities, create textile products or partake in associated tasks, and subsequently distribute these commodities independently to sustain their income and hired weavers who are engaged for wages whether they are full-time or part-time. In a manner consistent with its status as the predominant employer after the agricultural sector, the Government of India has, since the year 2015, designated August 7th as National Handloom Day (Devi, 2012).

LITERATURE REVIEW

Weaving is largely an informal activity. The informal labor market has benefits, including flexible working hours, the chance to launch one's own business, flexibility, and more job options (Syafitri et al, 2023). In Informal work, the wages are not fixed. It depends on the productivity of the work. Earnings also depend on the completion of work within the stipulated period. The more you work, the more you earn. In some occupations, the working hours are long, and the wages are meagre. A fundamental proposition of the efficiency wage theory posits that the productivity of employees is directly correlated to their level of compensation. Efficiency wage models may be elucidated through a straightforward model where the physical well-being of a worker, and consequently their productivity, is postulated to have a positive correlation with the actual wage remuneration. (Katz, 1986). Romaguera (1991), shows the presence of statistically noteworthy wage variations between industries and demonstrates the uniformity of these trends over time, job categories, and company scale.

In a study in Ghana it was established that the labor size stood out as the predominant determinant affecting the mean daily revenue derived from informal sector activities in Ghana. Moreover, an extra year of experience in managing the same venture results in a 10% boost in income. (Zogli et al.2019)**.** A study by Chingono (2016) found that augmentation in the duration of education positively impacts the probability of achieving a respectable income. Another study by Syafitri et al. (2023) provides innovative perspectives on the factors that affect the earnings of women employed in the informal economy. The study found that years of education, age, place of residence, and internet access have a positive impact on the likelihood of earning a decent job.

The handloom industry is a rural-based cottage industry which not only provides the basic necessities of life but also plays a vital role in the economic growth of the country through its contribution to employment generation, industrial output, and export earnings (Bori, 2021). For independent weavers they get wage after deducting the cost of raw-materials and other materials used. The author used the term as net income (Meitei, 2001). However, the hired weavers only receive wages per fabric. Bortamuly (2012) found that production and productivity are found to have a positive relationship with wages. The regression result shows a significant negative relationship between wages and weavers' age, suggesting a wage reduction as weavers grow older. Basumatary & Devi (2022) also suggests that education as a variable is not significant in the weavers' wages.

Lakshmi et al. (2022) found a substantial positive correlation between the weaver's socioeconomic status and age, educational attainment, and working hours since people are more knowledgeable as they age, which in turn aids in increasing revenue hence their socioeconomic standing will inevitably rise.

Weaving in Manipur

According to the Census of 2011, the total population of Manipur, a small state in Northeastern part of India, is 28.56 lakhs, of which 14.39 lakhs are male and 14.17 lakhs are female. In 2024, the population of Manipur is estimated to be 32.53 lakhs, with an estimated male population of 16.32 lakhs and female population of 16.21 lakhs (Ministry of Health and Family Welfare, 2019). There are not any large- or medium-sized businesses that can handle the increasing labor force, which cannot also be absorbed in the government sector. In addition to supporting many households, the informal sector adds value by supplying wage items, raw materials, and other services to the formal sector. In addition to the state economy's weak structure, women's low educational attainment forces them into informal jobs. (Gurumayum, 2015). This study found that wages in weaving in Manipur are fixed at a piece rate. It also varies according to the type of product the weavers weave. For *Kum phanek* or *phige phanek,* it took almost 20 days to 30 days to complete. The work involved crafting artistic and unique designs. The same goes for *Rani-phee* and *wangkhei-phee*. After a man from Thoubal launched the machine, people have also started weaving on semi-automatic. In our research, only 45 weavers are reported using semi-automatic looms. They weave mainly plain *phanek*, *phee*(dupatta), *Mayek Naiba phanek* and bed sheets. Due to the fast weaving speed of this semi-automatic machine, and the intrinsic design required, silk cannot be woven on semi-automatic looms. A phanek can be woven in one hour and a *phee-matek* in 30 minutes. The weavers are paid chiefly based

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on their products and are paid mainly by piece rate/product rate. In the Handloom sector, wages are determined by the piece rate, not based on the hours it takes to complete a final product. There are varying wages based on the type and intricacy of products they weave. There is a vast difference in wages between independent and hired weavers. Also, it is based on the fabrics they use. It was observed that the remuneration is intricately connected to the efficiency of labor in the handloom industry. The following table shows how product type affects income. In this study dummy variables for weavers of Raniphee and Phanek have been used.

Table 1 : Average income of weavers of different product types

Product type	Frequency	Average annual income in ₹
Raniphee	172	137040.7
Wangkhei phee	44	76938.64
phanek	252	56185.73
Innaphee	60	74850
others	32	54203.13

Source: Field survey

SOURCE OF DATA AND SAMPLING DESIGN

The survey was conducted in four valley districts of Manipur during August 2023 to January 2024. These were Imphal-West, Imphal-East, Thoubal and Bishnupur. The framework for data was the 4th Handloom Census report of the number of weavers in each district and cluster areas were selected, and household weavers were randomly selected. The number of weavers in each district is categorized according to the population given in the raw data, and random sampling is followed thereafter from each. A total of 24 blocks have been surveyed from the four districts, with 8 urban clusters and 16 rural area clusters.

Within the urban cluster areas, only *Wangkhei* is located within Imphal city, or main bazaar and the rest of the urban population are located in *Bishnupur* and *Thoubal,* far from the main Imphal city, and they still retain the village way of life. In Manipur, weavers are basically clustered within the rural or village areas. Multiple Regression Analysis Techniques using dummy explanatory variables were employed in the study. The survey was taken exclusively from amongst women weavers. A sample of 560 respondents was used. The women weavers were interviewed with the help of a pre-structured questionnaire. The structure of the sample is as follows:

Table 2: Statistics of qualitative variables

Variable	Attribute	Frequency	Attribute	Frequency	Total
Location	Rural	380	Urban	180	560
Marital status	Married	459	Unmarried	101	560
Loom	power loom	42	Manual	518	560
Category	Hired	440	Independent	120	560
Training	Trained	120	Untrained	440	560
Education	Educated above matriculation	193	Educated upto matriculation	329	
	Uneducated	38			560
Product	Raniphee	172	Phanek	252	
	Wangkhei phee	44	Innaphee	60	
	others	32			560
Method of sales	Direct to customer	32	To co-operatives	82	
	To middlemen	330	others	116	560

ESTIMATION AND FINDINGS

The study used Multiple Linear Regression model to assess the factors influencing income of the weavers. The multiple linear regression model is employed to examine the correlation between a dependent variable and multiple independent variables. (Greene 2008)

The income of weavers is influenced by several factors. In this study, we examined the impact of 14 variables on income of weavers. These variables include age, marital status, educational status, and location, type of looms, category of weavers, method of sales, and number of family members involved in weaving and training and product type.

The conceptual model can be expressed as:

$$\text{Ln INC}=\beta_0+\beta_1\text{AGE}+\beta_2\text{MAR}+\beta_3\text{EDU}+\beta_4\text{LOC}+\beta_5\text{CAT}+\beta_6\text{LOOM}+\beta_7\text{SDUM1}+\beta_8\text{SDUM2}+\beta_9\text{SDUM 3}+\beta_{10}\text{TRAIN}+\beta_{11}\text{FWEAV}+\beta_{12}\text{EXP}+\beta_{13}\text{DPROD1}+\beta_{14}\text{DPROD2}+€$$

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Where β_0 is the intercept term and β_i i=1,2,..14 are the regression coefficients associated with the explanatory variables: age, marital status, Education, Location ,Category of weavers, Type of Looms, Method of sales, No of family members involved in weaving and Government Training ,years of experience, types of product and € represents disturbance term. Dummy variables have been used for marital status, education, location, category of weavers, type of looms, method of sales, Government training and product types. The disturbance emerges due to multiple factors, predominantly stemming from the inherent limitation of encompassing all factors influencing an economic variable within a model, regardless of its complexity (Greene, 2002).

Table 3: Description of the Variables

Variables	Explanation
INC	Annual income of handloom weavers in rupees
AGE	Age of weavers in years
EXP	Experience of weavers in completed years
EDU	EDU=1 if literate above matriculate =0 otherwise
MAR	MAR=1 if married, widow, divorced =0 otherwise
LOC	LOC =1 if Rural =0 if urban
CAT	CAT=1 if Independent = 0 if hired
SDUM	Method of sales; SDUM1=1 if sold to middlemen =0 otherwise SDUM2=1 if sold to cooperatives =0 otherwise SDUM3=1 if sold direct to consumers =0 otherwise
FWEAV	Number of additional family member involved in weaving
LOOM	LOOM=1 if power loom is used =0 otherwise
TRAIN	TRAIN=1 if respondent had training in government sponsored Programmes =0 otherwise
PROD	DPROD1=1 if the product is Raniphee =0 otherwise DPROD2=1 if the product is phanek =0 otherwise

The average Income of the weavers is ₹ 84536.79. The minimum annual income is found to be ₹ 1000 and the maximum is found to be ₹ 17, 28, 000.The age of the weavers' lies in between 17 to 80 and the average age is 40 years. About 67.86% of sample weavers reside in rural areas.81.96% of weavers are married. Two categories of weavers were used in this study. They are independent weavers and hired weavers. In other studies, they include weavers under Master-Weavers and .under co-operatives (Bori2021; Bhowmik2021). Hired weavers constituted 78.57% of the weavers. Weaving is not a one-man job. Earlier it used to be a family job where every family member is involved. Currently reeling and spinning are all outsourced to the professionals in the locality. From the sample weavers it is found that 20.89% of sample weavers have two family members involved in weaving with their own ownership of looms. Despite Government efforts only 21% of the weavers have had access to government sponsored training. The main trainings given are mostly related to reeling, new design weaving, dyeing etc. In our study as dependent variable we use the logarithmic transformation on income of weavers. Employing the logarithm of income facilitates a more intuitive interpretation of relationships, effectively addresses the issue of skewed distributions, and offers a more appropriate framework for modelling in numerous instances. Mincer (1974) in his study used the log of earnings (income) as the dependent variable to assess how education and experience affect wages. Another study in India by Datt &Ravallion (1998) investigates the phenomenon of rural poverty within the context of India, employing the logarithm of household income as a metric to evaluate the influence of agricultural productivity on income disparities and the alleviation of poverty.

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The Ordinary Least Squares (OLS) technique has been used to estimate the influence of these factors. The F statistic value in the OLS estimation indicates that the model is significant at a 1 percent level, with an F value of 17.00187. The R-squared value is 0.304, indicating that the model explains 30 percent of the variation in the log annual income of the weavers.

Table 4: Factors influencing income of the weavers

Dependent Variable: LOG(INC)					
Method: Least Squares					
Sample: 1 560					
Included observations: 560					
Variable	Coefficient	Std. Error	t-Statistic	Prob.	VIF
C	10.79716	0.18269	59.10111	0	
AGE	0.000376	0.004079	0.092266	0.9265	1.688283
CAT	0.417065	0.081097	5.142807	0	1.041667
DPROD1	0.363094	0.086645	4.190608	0	1.275876
DPROD2	-0.18178	0.077968	-2.33152	0.0201	1.229444
EDU	0.014852	0.050041	0.296801	0.7667	1.00194
FWEAV	0.178554	0.030879	5.782297	0	1.028337
LOC	-0.00229	0.076613	-0.0299	0.9762	1.124298
LOOM	0.415848	0.103609	4.013641	0.0001	1.01461
MAR	-0.06616	0.085363	-0.77506	0.4386	1.044317
SDUM1	-0.28758	0.113869	-2.5255	0.0118	1.28821
SDUM2	-0.35433	0.087812	-4.03506	0.0001	1.415957
SDUM3	-0.48282	0.139603	-3.45847	0.0006	1.036639
EXP	-0.00011	0.00399	-0.02725	0.9783	1.542374
TRAIN	-0.0589	0.076271	-0.77229	0.4403	1.016525
R^2=0.304		F-statistic =17.00187			

Source: Authors' estimation from the primary data collected from primary survey, 2023

Variables with positive impact are AGE, CAT, DPROD1, EDU, FWEAV, and LOOM. Variables with negative impact are DPROD2, LOC, MAR, SDUM1, SDUM2, SDUM3, EXP and TRAIN. Out of them statistically significant variables are CAT, DPROD1, FWEAV, DPROD2, SDUM1, SDUM2 and SDUM3. Multicollinearity among the regressors is not serious as none of the VIFs is close to 4.

The antilog of the intercept is the median income of the dummies with value zero. It is the median income of hired workers who produce clothes other than raniphee and phanek, whose highest degree is matriculation, who reside in urban area, unmarried and not trained in government Programmes and not selling directly to customers, co-operatives and middlemen. Antilog of the intercept 10.79716 is ₹48881.78. It means that 50% of the weavers have annual income above ₹48881.78. Among the dummy variables only CAT, DPROD1, DPROD2, LOOM, SDUM1, SDUM2 and SDUM3 are statistically significant. EDU, LOC, MAR and TRAIN have no significant differential impact. Following the suggestion by Halvorsen and Palmquist (1980) the semi-elasticities for the significant dummies can be worked out as follows: take the antilog for the estimated dummy coefficient c and subtract 1 from it and multiply the difference by 100.

Table 5: Impact of significant Dummy variables on median income

	(exp(c)-1)*100	Difference	Median
Independent weaver	51.75	25296.32	74178.1
Producers of Raniphee	43.77	21395.56	70277.34
Producers of phanek	-16.62	-8124.15	40757.63
Automated loom	51.56	25203.45	74085.23
Selling directly to customer	-24.99	-12215.6	36666.22
Selling to cooperatives	-29.83	-14581.4	34300.35
Selling to middlemen	-38.29	-18716.8	30164.95

Among the quantitative variables only FWEAV is statistically significant and an increase of one family member in weaving activity will raise income by 17.85%. The impact of AGE and EXP are statistically insignificant.
The type of loom has a positive and significant effect on income. The use of a semi-automatic loom enables weavers to increase their income. The study found that a weaver using semi-automated loom can produce a phanek in 1 hour and an innaphee in 30 minutes, but in the traditional loom, it took a day (5 to 6 hours) to complete. This could be one reason why weavers switch to semi-automatic looms. Independent weavers have higher median income. Hired weavers have only the wages. Producers of Raniphee also are better off than producers of Phanek. All dummy variables representing method of sales are found to have negative effect with median income lower than the reference median income. Weavers selling to middlemen fare the worst with the lowest median income. This is more so as weavers largely sell their products to middlemen and they are vulnerable to exploitation. This result is expected. What is of concern is the inability to identify a sales method which takes the median income above the reference median income. This raises serious question on making weaving remunerative.
Also the present study found an insignificant impact of government-aided training. The main reason could be that the training is given for a short duration and is not given to the larger weaver population, which fails to show the impact of the increase in income of the weavers. Weavers typically learn their craft from family and neighbors, working in a community-based setting where similar products and designs are created. Artisans specializing in crafting rani-phee and moirang-phee predominantly reside in Wangkhei and Kongba. Meanwhile, weavers from more secluded areas, like those hailing from the distant village of Kakching Khunou, 53 km away from Imphal, face challenges in mastering the weaving techniques. Moreover, finding a marketplace to vend their creations remains a crucial need.
The study did not find the variables of age, educational qualification, and experience statistically significant, suggesting that these factors do not affect their earnings. A possible explanation is that higher education does not necessarily lead to increased revenue, possibly because the income level is dependent on the skill of the weaver independent of the weavers' educational attainment and largely acquired through social interaction. Additionally, age plays no significant role in enhancing the weavers' income, mainly because the younger generation participates less in weaving, and older weavers feel discouraged from continuing in the profession, often due to occupational health issues such as back pain, knee pain, musculoskeletal, and eyesight problems. Experience may be irrelevant when the technology and demand patterns are changing fast.

CONCLUSIONS

The study identifies significant variables that affect weavers' income in Manipur namely weavers' category, types of looms, sales methods, product types and the involvement of family members in weaving. Independent weavers earn a higher income compared to hired weavers. Direct Sales to customers generate more income than sales to cooperatives and middlemen. Weavers selling to middlemen fare the worst. Increasing the number of family members participating in weaving boosts the family's income, and adopting semi-automatic weaving methods raises weavers' income. Weavers of high quality products such as Raniphee are better off.
The government should provide more appropriate training to a significant number of weavers, enabling them to produce more expensive products competitively and earn higher wages. The government should offer loan facilities to weavers to enable them upgrade from handlooms to semi-automatic looms to increase their income. The government must take adequate steps and initiate short-term training courses. It should also create a direct marketing channel to raise the income of weavers. Implementing door to door delivery services for raw materials or yarn or establishing district yarn depots in cluster areas nearby are suggested measures. The government's support to weavers must expand to reach even the remotest villages. Regular health check-ups for weavers are necessary, as reports indicate the prevalence of musculoskeletal occupational health issues among them. Furthermore, weavers require more information. The government programs and assistance must be readily accessible, allowing them to derive maximum benefit. These policy measures would raise the standard of living of weavers and render the development process more inclusive.

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