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The Role of Education in Influencing Income Distribution and Financial Empowerment: Evidence from a Survey in India

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Abstract: ***India's income disparity revealed that of the 7.28 Crore individuals who filed income tax returns for AY 2024-25, the top 1% earned over ₹50 Lakh annually, while the top 10% earned an average of ₹13.53 Lakhs p.a. Meanwhile, the middle 40% earned an average of ₹1.65 Lakh p.a., and the bottom 50% struggled with an average income of just ₹71,163 per year. The present study utilized primary data to investigate these socio-economic disparities. Primary data was collected through a structured questionnaire, with qualitative analysis conducted using Atlas.Ti software for coding respondent's answers to questionnaire. Chi-square analysis revealed no significant relationship between education levels and household financial decision-making, nor between education and sources of financial information. However, a significant association (p-value < 0.05) was found between education level and income. To further analyze the determinants of income, the study employs the Mincer wage equation, regressing the natural logarithm of monthly income on years of schooling, work experience, its square, and gender. The regression results indicate that education and experience significantly and positively affect income, while the negative coefficient of experience squared confirms diminishing marginal returns. Gender, however, was not found to be a statistically significant predictor. These findings emphasized the critical role of education in income determination and highlighted the need for inclusive educational policies to reduce income inequality.***

Keywords: *Education, Income, Chi-Square Analysis, Mincer Equation, Income Inequality*

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Introduction:

In the pre-money era, when a standard currency or money was not conceived, and when barter system was in vogue, the world was far more balanced, equal, and just. In that world, people respected each other's skills and talents, and traded their skills and produce with those of the others. The exchange of goods or the barter system depended largely on the size and urgency of the need; and the true value of goods and services was only as much as its immediate needs for that particular goods or service. With the passage of time, the monetization of the skills produced goods and services into a standardized currency, which could be hoarded forever and traded for anything. Therefore, the need to enhance production or produce more than what the society needed at that point in time and storing it by monetizing it for a future profit, was out of question. It meant that the grains that were produced in a particular season were largely meant for instant consumption, with reserves being limited only till the next supply. Any other goods that needed to be traded for grains, would only be produced according to the need and not for bagging profit. In this way, people respected each other's profession, howsoever simple or complicated, for they depended on each other directly for their survival or existence. Therefore, irrespective of the people being skilled or unskilled, they found a respectful place for themselves, as long as they were able to harness some usefulness to the society. However, eventually with the passage of time and intervention of money, monetization of essential goods and services began. This led to the emergence of the idea of profits and that was where the social and economic divide commenced. Essential commodities were traded and investment in the most needed services, like education and healthcare, were used for profiteering and not for any benefit of the society. The standardized currency now replaced 'respect for skills' with 'profiteering from producing', which turned the producers and providers into things of money, thus deteriorating the society into a marketplace, where ruthless market forces of economics dominated over the laws of harmonious and respectful co-existence. The society that we live today of fragmentations and of being fractured is the result of such disaster. From this, it should be fathomed that money should not be treated as a goal, but only a path to the goal of greater good. In other words, money should act as a hygiene factor rather than the central focus, as proposed in the Herzberg's theory (Kurt, 2022).

The objective of the present study was to study the influence of education on income distribution and financial empowerment. The primary data was collected to explore the relationships between educational qualifications, sources of seeking financial information, financial decision-making, and income levels among households in India.

2) Literature Review: India currently offers an exceptionally vibrant panorama, characterized by an abundance of capital, skilled workforce, burgeoning market opportunities, and a youthful demographic dividend. This demographic dividend presents

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a significant opportunity for India to achieve social equity. The subsequent review of literature will explore the gaps in employment, income, as well as socio-economic disparities, to provide the context for the present study in the following sections.

2.1 Employment: The Indian agricultural industry is the largest employer in both the formal and informal sectors, with nearly 45.8% of Indians engaged in agricultural practice across rural and urban areas combined (Ministry of Statistics and Programme Implementation, 2023). However, its contribution to the country's GDP is 17.7% in FY'24. This means that out of every ₹100 generated, only ₹17.7 is attributed to agriculture, while Industry (which includes manufacturing) contributed 27.6%, and Services accounted for 54.7% in FY'24 (Government of India, 2024). According to the findings of Aneja et al., (2021), significant income disparities exist among these sectors, with the tertiary (service) sector contributing most to income inequality, while the primary (agriculture) sector helps to narrow this gap, although it still leaves farmers at a significant disadvantage in comparison to those in manufacturing and service sectors. This supports the observation that for the same effort, farmers earn significantly less compared to workers in manufacturing and services, suggesting a ratio of their earnings approximately 1:3:5, meaning that for the same effort, a farmer earns ₹1, a manufacturing worker earns ₹3, and a service sector employee earns ₹5. As a result, farmers often find themselves at a disadvantage, receiving insufficient compensation for their hard work, which frequently goes unrecognized. To address this issue, it is essential to explore ways to diversify farmers' income, mitigate the risks associated with agriculture, and ensure they have more financial resources to sustain their livelihoods. Therefore, fintech companies can seize this opportunity to provide funding to agricultural sector. In FY24, credit growth for agriculture and allied activities achieved double-digit increases of 55.63%, with agricultural credit rising from ₹13.3 lakh crore in FY21 to ₹20.7 lakh crore. This growth was contributed significantly by the Kisan Credit Card (KCC) scheme which provided timely and hassle-free credit to farmers, resulting in over 7.4 crore active KCC accounts by the end of 2023 (Government of India, 2024).

The challenges faced by the lower-income brackets are reflected in the disparities in earnings among agricultural workers as compared to manufacturing employees, and service sector professionals, which ultimately contribute to the growing income inequality in the country. The following sections shed light on the income distribution patterns in India compared to its neighbouring countries.

2.2 Income Distribution: India's economic growth and inequality significantly impact global dynamics, particularly given its large population. India experienced average income growth of only 2.6% annually from 1960 to 2022, a rate that has slowed in recent years. The average incomes in India, China and Vietnam were similar until around 1975. However, by 2000, incomes in China and Vietnam were 35%-50% higher than India, with Chinese incomes now approximately 2.5 times larger and Vietnamese income was

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higher about 33%. Despite lacking democratic governance, both China and Vietnam have surpassed India in growth, largely due to higher investments in health and education. In 1980, India's adult literacy rate was just 41%, compared to 65% in China and 84% in Vietnam, and by 2010, India's health expenditure was only 1.2% of GDP versus China's 2.7%. By 2022-23, India's income inequality reached critical levels, with the top 1% holding one of the highest incomes shares globally, surpassing countries like South Africa, Brazil, and the US. India ranks second only to South Africa in top 10% income share and falls in the middle for wealth distribution, with Brazil and South Africa showing extreme concentration (Kumar Bharti et al., 2024).

In India, while 7.28 crore individuals filed income tax returns for AY2024-25 (Ministry of Finance, 2024); of this the top 1% earn over 50 lakh per annum, while the middle 40% struggles with an average income of just 1.65 lakhs annually (Kumar Bharti et al., 2024). The middle class, often viewed as the aspiring segment of society, bears the brunt of taxation, and is increasingly stretched from all sides. Inflation has disproportionately impacted education and healthcare—two critical sectors that are often overlooked in official inflation metrics. Rising kindergarten fees and escalating healthcare costs are pushing the middle class deeper into debt. Meanwhile, the bottom 50% earn an average income of a mere 71,163 per year (Kumar Bharti et al., 2024), forcing many to prioritize immediate survival, which limits their access to quality education and healthcare and hinders their children's potential. Although microfinance institutions provide 3 trillion in Joint Liability Group (JLG) loans to this bottom of the pyramid population (NABARD, 2022), their profit-driven motives can lead to exploitation, perpetuating a cycle of poverty rather than promoting sustainable growth.

2.3 Socio-Economic Disparities: India has experienced robust annual growth of 13% in social sector spending over the past five years, amounting to approximately ₹23 trillion in FY 2023. However, this figure still falls short of meeting NITI Aayog's recommended target of 13% of GDP by 2030. Achieving this target is crucial for realizing the 17 United Nations Sustainable Development Goals (SDGs), which aim to eradicate poverty, ensure quality education and healthcare, promote gender equality, and address climate change (Sheth et al., 2024). According to Cree et al., (2022) The global economy suffers an estimated cost of $1.19 trillion (USD) due to illiteracy. This report further estimates that illiteracy costs a developed nation 2% of its GDP, an emerging economy 1.2% of its GDP, and a developing country 0.5% of its GDP.

Examining the budget allocations for education and health revealed critical insights into the socio-economic disparities impacting India's growth progression. Between FY18 and FY24, India's nominal GDP experienced a compounded annual growth rate (CAGR) of approximately 9.5%. During the same period, education expenditure grew at a CAGR of 9.4%, slightly below the GDP growth rate; while the health expenditure, in contrast, saw a more robust CAGR of 15.8% (Government of

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India, 2024). In FY24, the total budgeted expenditure was ₹90,45,119 Crore, with allocations for education and health detailed in Table 1.

Table 1: Budget Estimates for Education and Health Expenditure in India (2023-24)

Budget Estimates in 2023-24	Education	Health
Total Expenditure (₹ in Crore)	8,28,747	5,85,706
As a per cent of GDP (%)	2.7%	1.9%
As a per cent of Total Expenditure (%)	9.2%	6.5%
As a percent of Social Services (%)	35.3%	24.9%

Source: Economic Survey 2023-24, (Government of India, 2024)

The data presented in Table 1 highlights the stark disparities in budget allocations for education and health, which revealed the following significant implications for India's socio-economic environment:

- In 2023-24, the total budget estimate for expenditure on education was ₹8,28,747 Crore, constituting only 2.7% of GDP and 9.2% of total government expenditure. This figure is alarmingly low, especially considering the National Education Policy (NEP) 2020 recommendation of 6% (Akhter & Chauhan, 2024). As India is set to become a $5 trillion economy in the coming years (Central Bureau of Communication, 2021), the education budget remains significantly insufficient. This highlights a critical gap in the country's priorities, particularly given that India has the largest youth population (Ministry of External Affairs, 2021) in need of education, skills, and training.
- Despite education receiving a larger absolute allocation, compounded annual growth rate (CAGR) for health expenditure at 15.8% significantly exceeds the 9.4% growth rate for education between FY18 and FY24. This trend could result in health expenditure capturing a larger share of total expenditure in the future.

Addressing these socio-economic disparities is essential not only for promoting equity but also for enhancing overall economic growth. Investment in education equips the workforce with necessary skills, which further enables innovation and productivity. A more educated population can also adapt to changing market demands, leading to a more competitive economy. Additionally, a healthy society contributes to a more robust labour force, thereby reducing absenteeism and increasing productivity. The government can promote a sense of inclusion and belonging among its citizens by ensuring equitable access to education and healthcare through increased funding for these sectors. This stark inequality in income along with lower investments in health and education, highlights a significant research gap (as indicated below) in understanding India's persistent disparities compared to its regional counterparts:

1. Income & Opportunity Gap
2. Socio-Economic Gap

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3) Research Methodology:

The present study incorporated both qualitative and quantitative research methodologies, as detailed below:

a) **Sampling unit:** The sampling unit for the questionnaire were from Tier 1, Tier 2, Tier 3 & Tier 4 population.

b) **Sampling technique:** Random sampling was used during the data collection process for the primary data and deliberate sampling for the secondary data.

c) **Sample size:** The sample size of 120 was considered for this research work. This number was determined through Yamane formula (Yamane, 1967):

$$n = \frac{N}{1 + N * (e)^2}$$

Where:
n – Sample size;
N – Population size;
e – Acceptable sampling error.
The population size (N) was taken as 150 and the acceptable sampling error 'e' was taken as 5% in the above equation, the sample size (n) was arrived at 109. We received 120 responses to our questionnaire, continuing until we reached the point of saturation, where no new themes or insights were emerging from the data (Guest et al., 2006).

d) **Research Design:** The research design is exploratory.

e) **Data Collection Process:** The survey was conducted at the end of 2024, and the data was collated at the beginning of 2025. It captured a wide range of socio-economic variables such as education, income levels, gender, and financial empowerment.

f) **Survey Methodology:** The survey was carried out online using Google Forms to record the responses from participants. The survey link was distributed via email and social media platforms using trusted and reliable sources. This approach allowed for faster reach and ensured that the sample was diverse. The questionnaire was pre-tested with three stakeholders, which eliminated the weakness of the questions (if any) and ensured the quality of the questionnaire.

g) **Data Cleaning and Sorting:** The dataset underwent a thorough cleaning and sorting process to identify and address any missing or inconsistent entries. The data used in this study were primary and were collected specifically for this research. The study aimed to contribute new insights to the existing literature on income determinants, particularly on the levels of education and their relationship with income.

h) **Survey Analysis Tool:** The collected data has been analysed through Atlas.ti via coding, to create visual representations of the questionnaire responses (Charmaz, 2006) followed by Chi-Square Analysis for the primary data (Rana & Singhal, 2015). The present study employed the Mincer equation (Mincer, 1974) and Regression analysis (Alexopoulos, 2010) to analyse the determinants of income, with education, market experience, and gender as key predictors. The Mincer earnings function modelled the natural logarithm of income as a linear function of years of education and a quadratic function of work experience. In the present study, the model was

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extended by incorporating gender as a binary variable. The econometric specification of the model is as follows:

$$ln(Y)=\beta 0+\beta 1 \cdot Education+\beta 2 \cdot Experience+\beta 3 \cdot Experience2+\beta 4 \cdot Gender+\epsilon$$

Where:

ln(Y) is the natural logarithm of monthly income; Education & Experience is measured in years; Gender is a binary variable, coded as 1 for female and 0 for male; and ϵ is the error term.

4) Findings:

The data analysis in Atlas.ti was conducted using coding. Coding means categorizing segments of data with a short name that summarizes and accounts for each piece of data (Charmaz, 2006). In this context, In Vivo Codes was utilised, which reflect participants' terminology and conveys meaning relevant to the research objectives (Charmaz, 2006). Our analysis primarily employed In Vivo Codes to categorize questionnaire responses. After coding, a Sankey diagram was created to illustrate the number of responses in each category. The categories displayed in the Sankey diagram, shown in Figure 1 below, included the respondents' educational qualifications, their sources of information regarding financial matters, the decision-makers concerning household finances, and their current income levels per annum.

These categories were analysed due to the significant divide in income distribution in India. We aimed to examine whether education empowered respondents in their pursuit of financial information, impact their decision-making regarding household finances, and influenced their current income levels. Chi-square analysis was conducted for categorical analysis. The findings of this analysis will be discussed subsequently.

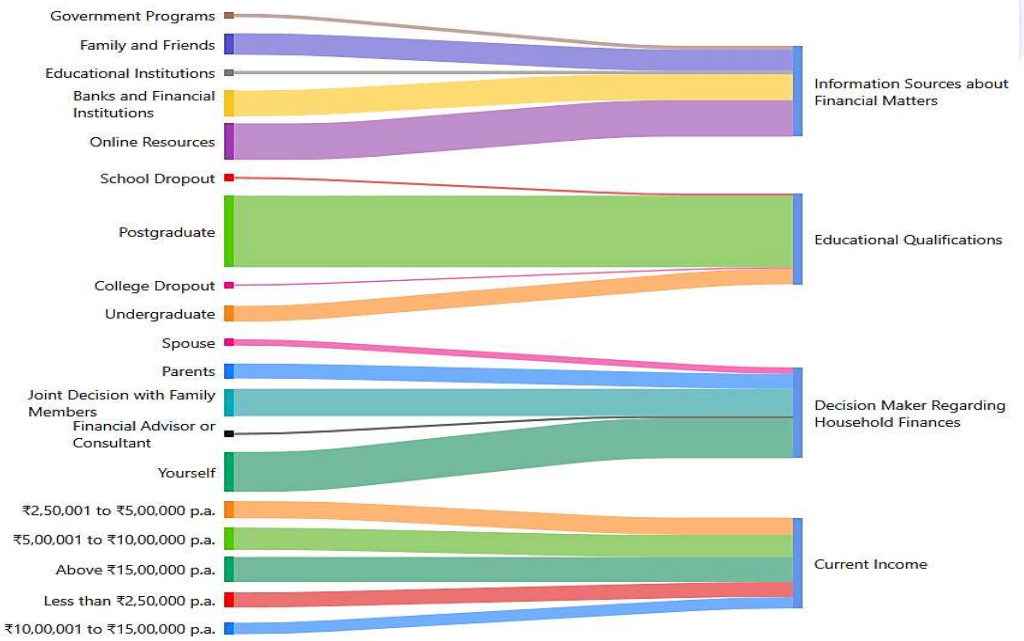

Figure 1: A Sankey Diagram Representation of Respondent Profile Analysis

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I. Chi-Square Analysis of Primary Data:

A survey was carried out on the educational qualifications of the respondents and the relationship with the information sources about financial matters, the main decision-maker with regard to matters concerning finances in their respective household and their level of income. Table 2 given below presents cross tabulation of the distribution of responses based on the level of educational qualification and the sources of information categorised as information from the banks and financial institutions, educational institutions, family and friends, government programs and online resources. Table 3 shows decision-makers namely financial advisor or consultant, joint decision with family members, parents, spouse, and independently by self. The income was classified as less than ₹2,50,000 per annum, ₹2,50,001 to ₹5,00,000 per annum, ₹5,00,001 to ₹10,00,000 per annum, ₹10,00,001 to ₹15,00,000 per annum, and above ₹15,00,000 per annum and is shown in Table 4 below. All the tables are classified by the level of one's educational qualification, with the absolute frequencies assigned for each category.

Table 2: Education vs. Information Sources on Financial Matters

Information Sources	Postgraduate	Undergraduate	College Drop Out	School Drop Out
Banks and Financial Institutions	30	3	1	0
Educational Institutions	4	0	0	1
Family and Friends	20	6	1	1
Government Programs	4	1	0	0
Online Resources	36	11	0	1

The cross-tabulation of education and information sources on financial matters given in Table 2 has led us to formulate and test the following hypotheses:

H0: There is no association between educational qualification and sources of information about financial matters.

H1: There is an association between educational qualification and sources of information about financial matters.

The Chi-Square analysis of data in Table 2 resulted in a p-value of 0.352, which indicated that there is no statistically significant association between educational qualifications and information sources. The p-value is > 0.05 indicating that the null hypothesis (H0) cannot be rejected. The differences in information sources among different educational qualifications are likely due to random variation rather than a true association. Based on this analysis, it can be concluded that educational qualifications do not significantly influence the individuals' options of seeking information about sources of financial matters.

Table 3 depicts the relationship between educational qualifications and the decision-making regarding household finances.

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Table 3: Education vs. Decision-Makers in Household Finances

Decision Maker	Postgraduate	Undergraduate	College Drop Out	School Drop Out
Financial Advisor or Consultant	2	1	0	0
Joint Decision with Family Members	32	4	0	0
Parents	13	7	0	0
Spouse	6	1	0	1
Yourself	41	8	2	2

The hypotheses given below sought to determine whether there is a statistically significant association between educational qualifications and the roles individuals assume in financial decision-making.

H0: There is no association between educational qualification and making of decisions regarding the household finances.

H1: There is an association between educational qualification and making of decisions regarding the household finances.

A Chi-Square analysis of data in Table 3 provided a p-value of 0.324, indicating that the null hypothesis (H0) cannot be rejected. This suggests that, based on the data, educational qualifications do not significantly influence the decision-making processes regarding household finances.

No association between educational qualification and seeking of financial information and decisions related to household finances was found. This prompted an investigation about the relationship between educational qualification and income levels through the following hypotheses statements.

H0: There is no association between educational qualification and current income level of the respondent.

H1: There is an association between educational qualification and current income level of the respondent.

Table 4: Education vs. Current Income

Current Income	Postgraduate	Undergraduate	College Drop Out	School Drop Out
Less than ₹2,50,000 p.a.	8	10	0	2
₹2,50,001 to ₹5,00,000 p.a.	16	5	1	1
₹5,00,001 to ₹10,00,000 p.a.	25	3	1	0
₹10,00,001 to ₹15,00,000 p.a.	15	0	0	0
Above ₹15,00,000 p.a.	30	3	0	0

The Chi-Square analysis of data in Table 4 resulted in a p-value of 0.001242, lower than the 0.05 alpha level, which led to the rejection of the null hypothesis (H0) and

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acceptance of the alternative hypothesis (H1), indicating a statistically significant association between education levels and income categories.

Our findings were supported by the multiple factors that led to the stagnation of income for the bottom 50% and middle 40% in India. A key issue was the lack of quality, accessible education for the broader population rather than just the elite. Since liberalization, inter-generational mobility related to education has remained low, with nearly 30% of Indians still illiterate as of the 2011 census. Research shows that educational inequality accounted for about 25% of wage inequality from 1988 to 2018. Additionally, the services-led growth since liberalization has exacerbated economic disparities. As of recent data, a significant portion of the workforce remains in agriculture (45.5%), with limited movement toward more productive sectors like manufacturing (11.6%). This reliance on agriculture highlighted the ongoing challenge of transitioning workers to better-paying jobs (Kumar Bharti et al., 2024).

Although our findings indicate a significant association between education levels and income categories, it is important to note that an increase in income does not necessarily correlate with higher literacy rates. For example, according to the Ministry of Statistics & Programme Implementation (MoSPI), Telangana ranks first among Indian states in per capita income for the fiscal year 2022-23, with a figure of ₹3,08,732. Yet, the literacy rate in Telangana remains relatively low at just 66.54% as of 2023 (Government of Telangana, 2024).

Conversely, while higher income does not guarantee improved literacy, there is evidence that enhancing literacy rates contributes to increase in per-capita income. Education is recognized as a crucial mechanism for breaking the cycles of poverty associated with illiteracy. Cree et al., (2022) suggested that each additional year of education among the adult population can increase long-term economic growth by approximately 3.7% and raise per capita income by 6%. Improving basic literacy for children in low-income countries could lift 171 million people out of poverty by ensuring they acquire fundamental reading skills.

II. Mincer equation and Regression analysis:

This study estimated the determinants of individual earnings using a standard Mincerian earnings function described in the research methodology, in which the natural logarithm of monthly income was regressed on years of schooling, market experience, its square, and gender. The results of the regression are captured in Tables 5 & 6.

Table 5: Regression Analysis Summary

Regression Statistics	
Multiple R	0.997
R Square	0.993
Adjusted R Square	0.984

ANOVA	
F	4220.81
Significance F	<0.001

Model Fit:

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- Multiple R of 0.997, being close to 1, indicated a very strong correlation or linear relationship between the independent variables and the dependent variable.
- The model exhibits a reasonable R-squared of 0.993, which indicates that 99.3% of the variation in log income is explained by education, experience, and gender.
- Adjusted R Square of 0.9844 is also very high, even after adjusting for the number of predictors, confirming the strength of the model
- The p-value associated with the F-test is less than 0.001, indicating that the predicted values are close to the observed values, which supports the model's goodness-of-fit.

ANOVA:

- A higher F-statistic of 4220.81 suggested that the overall model is statistically significant
- A very small p-value of <0.001 means the overall regression model is statistically significant and that the independent variables collectively have a significant effect on the dependent variable.

Results and Interpretation of Coefficients: The results of the Mincer equation estimating the relationship between income and education, experience and gender are presented in Table and summarized below:

Table 6: Statistical Coefficients and Significance of Predictors

Metric	Coefficient	Standard Error	t-value	p-value
Education (Years)	0.573	0.022	26.316	<0.001
Experience (Years)	0.115	0.032	3.659	<0.001
Experience^2	-0.002	0.001	-3.028	0.003
Gender	-0.190	0.204	-0.928	0.356

- Education: Each additional year of education is associated with an increase of 0.573 in log(income) ($p < 0.0001$), indicating a strong positive relationship between education and income.
- Experience: Each additional year of experience is associated with an increase of 0.115 in log(income) ($p = 0.0004$), confirming that experience also contributed positively to income.
- Experience^2: The negative coefficient (-0.002) for the squared experience suggests diminishing returns to experience. While the early years of experience increased income, the marginal benefit decreased over time ($p = 0.003$).
- Gender: The gender variable was found to be statistically insignificant in explaining income differences ($p = 0.356$), indicating that, after controlling for education and experience, no significant difference in income exists between males and females in this sample dataset.

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6) Conclusions:

The Chi-Square analysis revealed significant insights into the dynamics of education and income in India. While formal educational qualifications were found to have no direct influence on financial decision-making or information sourcing, education played a crucial role in determining income levels. Since Chi-square analysis only showed associations, not causation, the present study went deeper by employing the Mincer wage equation, which is a standard econometric model used to evaluate how education, market experience, and gender influence income. Furthermore, global estimates highlight the economic burden of illiteracy. India incurred a cost of $54 million due to illiteracy, which, while lower than that of larger economies like the United States ($301 million) and China ($136 million), remains a significant economic concern. Investments in Educational initiatives could save the nation on costs associated with lost productivity and its potential income (Cree et al., 2022).

7) Scope of Future Work:

The present study collected responses from individuals across Tier 1, Tier 2, Tier 3, and Tier 4 cities, representing diverse income groups and demographic backgrounds. This wide-reaching approach ensured that the findings are broadly representative and not confined to any specific region or socio-economic segment. However, the lacuna of this study is that it collected responses from 120 respondents, as the point of saturation had been reached. Although the Mincer model was estimated successfully, the study faced constraints due to the limited availability of explanatory variables. This opens door for future research to use more comprehensive datasets like the National Sample Survey Office (NSSO) or Periodic Labour Force Survey (PLFS) to conduct robust econometric modelling.

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