Wage Earnings: Does Experience outweigh Education? Evidence from Ernakulam district of Kerala

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Abstract

The study empirically analyses the impacts of education, experience, days of work per month and gender on wage earnings. The study makes use of primary data and a cross sectional analysis is done via Karl Pearson's correlation and log level regression. Non-parametric tests like Mann-Whitney U test and Kruskal Wallis test are made use to test different hypotheses. The results of the study point to the positive impacts of education and experience on wage earnings and conclude the outweighing nature of experience than education on wage earnings.

Keywords: wage earnings, education, experience

1.Introduction

Education, around the globe is conceived as one of the influential determinant of wage earnings. Kerala, which is known for its high rates of educated unemployment, cast doubt on the effectiveness of education on rate of return and labour productivity. Paradoxical entity of higher rates of education sans skill pesters the economy igniting renewed interests in skill-based education recently. Extensive theoretical and empirical studies dealt with the analysis of education, experience and consequent impacts on wage earnings. The present study indulges in a similar empirical analysis of impacts of significant variables on wage earnings.

The structure of the paper is organized as follows: Section 2 delineates on the objectives and hypotheses of the study. Section 3 briefly describes the past research done on the topic. Section 4 briefly depicts the methodologies applied in the study. Section 5 elaborates the results of analysis and its discussions. Section 6 summarizes important findings of the study.

2.Objectives and Hypothesis

The primary objective of the study was to measure the impact of education, experience, days of work per month and gender on wage earnings. The study intended to answer the question whether experience outweighed education in determining wage earnings. The study also intended to analyse whether there were any significant

difference on wage earnings on the basis of gender, education and profession. The proposed hypotheses of the study were the following.

H_{01}: There is no significant difference on wage earnings on the basis of gender.

H_{02}: There is no significant difference on wage earnings on the basis of types of education.

H_{03}: There is no significant difference on wage earnings on the basis of types of profession.

3. Review of Literature

Geetha rani P in her study 'Disparity in earnings and education in India analysed the impact of different levels of education, religion, caste as well as the impact of living in urban and rural communities on earnings in India.(Geetha Rani, 2014).

Rajesh Raj and Duraisamy in their paper 'Does schooling affect labour productivity and earnings? Evidence from the unorganised coir yarn manufacturing sector in Kerala, India', analysed the role of human capital in determining labour productivity and earnings in the unorganised manufacturing sector by focusing on the coir yarn manufacturing units in the Indian state of Kerala. The study established that there was a positive relationship between education, labour productivity and earnings and the sector would stand to benefit from a more educated labour force.(Rajesh Raj & Duraisamy, 2008)

Singha Roy N in his paper 'Wage Rate: Is this Return to Education or Return to Physical Capability? Evidence from Rural India', estimated the wage function for daily labor market participants in Semi-Arid Tropics of rural India within a traditional agrarian framework. (Singha Roy, 2020)

Agrawal and Agrawal in their paper titled 'Who Gains More from Education? A Comparative Analysis of Business, Farm and Wage Workers in India', estimated private returns to education for business, farm and wage workers in India using a nationally representative household survey and concluded that higher education was more rewarding for wage workers.(Agrawal & Agrawal, 2019)

Duraisamy P in his paper 'Changes in returns to education in India, 1983-94: By gender, age-cohort and location', provided estimates of the returns to education in wage employment in India by gender, age cohort and location (rural-urban) from 1983-94 using data from a large national level household survey.(Duraisamy, 2002)

4.Research Methodology

The present study is based on primary data collected from 103 respondents belonging to the different parts of Ernakulam district of Kerala. A well-structured questionnaire was made use in the collection of data. Statistical and Econometric tools like SPSS, Gretl and Eviews were used in the study. Normality tests like Kolmogorov- Smirnov and Shapiro-Wilk and Levene's test of homogeneity of variance were conducted. Non-parametric tests of Mann-Whitney U test and Kruskal Wallis tests were applied to test the hypotheses. A log- level regression analysis is also carried out to measure the effectiveness of education, experience, days of work and gender on wage earnings.

5.Results and Discussion

5.1) Demographic Profile of the respondents: -

The demographic profile in table 1 reveals that the female share of the respondents dominates with 52.4 percent compared to 47.6 percent of male share. 99 percent of the respondents are having education above SSLC with 54.4 percent of Degree holders. 41.7 percent of the respondents work in private employment and 33 percent of them belong to the student category.

Table 1: Demographic Profile of the respondents

Variable	Characteristics	Frequency	Percentage
Gender	Male	49	47.6
	Female	54	52.4
Education	Below SSLC	1	1.0
	SSLC	9	8.7
	HSS	7	6.8
	Degree	56	54.4
	PG	11	10.7
	Professional Education	13	12.6
	Technical Education	6	5.8
Profession	Student	34	33.0
	Business	13	12.6
	Private Employment	43	41.7
	Govt Employment	9	8.7
	Daily Wages	4	3.9

5.2) Cross Tabulation Analysis

a) Cross tabulation of Gender and Education levels.

A Cross tabulation analysis of Gender and Education among the respondents exhibits the dominance of females in degree and professional education while males dominate in technical education.

Table 2. Gender * Education Cross tabulation

		Education							Total
		Below SSLC	SSLC	HSS	Degree	PG	Professional Education	Technical Education	
Gender	Male	0	6	6	24	6	2	5	49
	Female	1	3	1	32	5	11	1	54
	Total	1	9	7	56	11	13	6	103

b) Cross tabulation analysis of Gender and Profession

A cross tabulation analysis of gender and profession reveals that most of the respondents are working in private employment with almost same gender share. Another observations from the table are that none of the female respondents are engaged in daily wages and the negligible share of female business persons.

Table 3. Gender * Profession Cross tabulation

		Profession					Total
		Student	Business	Private Employment	Govt Employment	Daily Wages	
Gender	Male	10	11	21	3	4	49
	Female	24	2	22	6	0	54
Total		34	13	43	9	4	103

5.3) Test of Normality

The decision of methodology to be used to test the hypotheses is based on the requirement of meeting the assumptions of normality and homogeneity of variance. The study made use of both Kolmogorov-Smirnov and Shapiro-Wilk tests

Table 4.Tests of Normality

	Gender	Kolmogorov-Smirnov			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Wage earnings	Male	.212	49	.000	.803	49	.000
	Female	.215	54	.000	.802	54	.000

Both K-S test and Shapiro- Wilk test prove that Wage earnings of male and female respondents are not normally distributed since their significance levels are almost zero.

Table 5.Tests of Normality [a]

	Education	Kolmogorov-Smirnov			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Wage earnings	SSLC	.255	9	.095	.884	9	.173
	HSS	.391	7	.002	.671	7	.002
	DEGREE	.235	56	.000	.747	56	.000
	PG	.266	11	.028	.777	11	.005
	Professional Education	.258	13	.018	.851	13	.029
	Technical Education	.340	6	.029	.740	6	.016

a. Wage earnings is constant when Education = BELOW SSLC. It has been omitted.

It is clearly observable from the significance levels of K-S test and Shapiro-Wilk tests that Wage earnings of education type of SSLC alone follow normal distribution.

Table 6. Tests of Normality

	Profession	Kolmogorov-Smirnov			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Wage earnings	Student	.314	34	.000	.442	34	.000
	Business	.234	13	.050	.836	13	.019
	Private Employment	.220	43	.000	.689	43	.000
	Govt Employment	.175	9	.200[*]	.938	9	.558
	Daily Wages	.349	4	.	.865	4	.279

Wage earnings of Business class and Government Employees follow normal distribution according to K-S test while according to Shapiro-Wilk test, Wage earnings of Government Employees and Daily wagers follow normal distribution. Thus the study is not capable of parametric tests for hypotheses testing.

5.4) Test of Homogeneity of Variance

Test of homogeneity of variance is carried out by Levene's Statistic and it is found that wage earnings on all categories failed to meet the assumption of homogeneity of variance, since significance levels are well below 0.05.

Table.7 Levene's Statistic

		Levene Statistic	df 1	df 2	Sig.
Wage earnings based on gender	Based on Mean	20.087	1	101	.000
Wage earnings based on types of education	Based on Mean	2.347	5	96	.047
Wage earnings based on types of profession	Based on Mean	6.193	4	98	.000

5.5) Mann- Whitney U Test

The first null hypothesis that there is no significant difference on wage earnings on the basis of gender is tested with Mann- Whitney U test since independent variable Wage earnings has two categories such as male and female.

Table 8.Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Wage earnings	103	28094.76	30250.648	760	150000
Gender	103	1.52	.502	1	2

Table 9.Test Statistics[a]

	Wage earnings
Mann-Whitney U	800.500
Asymp. Sig. (2-tailed)	.001

a. Grouping Variable: Gender

From the test statistics, it can be concluded that there is significant difference on wage earnings on the basis of gender (p value =. 001) hence the null hypothesis is rejected.

5.6) Kruskal Wallis Test

The second and third hypotheses are tested with Kruskal Wallis test since independent variable has more than two categories.

The second null hypothesis was that there is no significant difference on wage earnings on the basis of types of education.

Table 10.Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Wage earnings	103	28094.76	30250.648	760	150000
Education	103	4.26	1.260	1	7

Table 11.Test Statistics[a,b]

	Wage earnings
Chi-Square	7.208
df	6
Asymp. Sig.	.302

a. Kruskal Wallis Test

b. Grouping Variable: Education

Kruskal Wallis test concludes that there is no significant difference on wage earnings on the basis of types of education as p value is significantly greater than 0.05 and the study fails to reject the null hypothesis here.

The third null hypothesis was that there is no significant difference on wage earnings on the basis of types of profession.

Table12.Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Wage earnings	103	28094.76	30250.648	760	150000
Profession	103	2.38	1.147	1	5

Table 13.Test Statistics[a,b]

	Wage earnings
Chi-Square	66.372
df	4
Asymp. Sig.	.000

a. Kruskal Wallis Test

b. Grouping Variable: Profession

Kruskal Wallis test concludes that there is significant difference on monthly wages on the basis of type of profession as p value is significantly less than 0.05 and null hypothesis is rejected.

Table 14. Pairwise Comparisons of Profession

Pairwise Comparisons of Profession
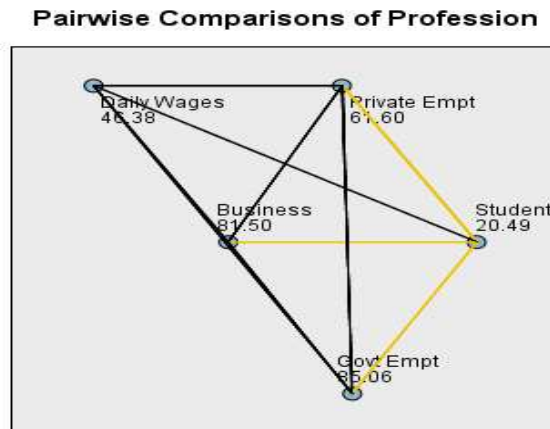
Each node shows the sample average rank of Profession.

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
Student-Daily Wages	-25.890	15.761	-1.643	.100	1.000
Student-Private Empt	-41.119	6.843	-6.009	.000	.000
Student-Business	-61.015	9.723	-6.275	.000	.000
Student-Govt Empt	-64.570	11.177	-5.777	.000	.000
Daily Wages-Private Empt	15.230	15.587	.977	.329	1.000
Daily Wages-Business	35.125	17.049	2.060	.039	.394
Daily Wages-Govt Empt	38.681	17.918	2.159	.031	.309
Private Empt-Business	19.895	9.437	2.108	.035	.350
Private Empt-Govt Empt	-23.451	10.930	-2.146	.032	.319
Business-Govt Empt	-3.556	12.930	-.275	.783	1.000

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.

The pair wise comparison exhibits that the main difference in wage earnings is between student- private employment, student-business and student- government employment groups.

5.7) Correlation Analysis

Table 15. Correlations		Wage	Years of Experience	Years of Education	Days of Work per month	Age
Wage	Pearson Correlation	1	.523[**]	.161	.306[**]	.601[**]
	Sig. (2-tailed)		.000	.104	.002	.000
Years of Experience	Pearson Correlation	.523[**]	1	-.037	.253[*]	.852[**]
	Sig. (2-tailed)	.000		.708	.010	.000
Years of Education	Pearson Correlation	.161	-.037	1	.013	.035
	Sig. (2-tailed)	.104	.708		.894	.723
Days of Work per month	Pearson Correlation	.306[**]	.253[*]	.013	1	.342[**]
	Sig. (2-tailed)	.002	.010	.894		.000
Age	Pearson Correlation	.601[**]	.852[**]	.035	.342[**]	1
	Sig. (2-tailed)	.000	.000	.723	.000	
**. Correlation is significant at the 0.01 level (2-tailed).						
*. Correlation is significant at the 0.05 level (2-tailed).						

A Karl Pearson correlation analysis reveals that Wage earnings have a relatively high positive and statistically significant correlation with years of experience (.523), days of work per month (.306) and age (.601) whereas wage earnings and years of education display relatively low positive correlation which is statistically not significant thus not conclusive. Years of experience and age display high degree of correlation (.852), which indicate that they are multicollinear variables.

5.8) Regression Analysis

A log-level regression equation is estimated as below.

$$\log(wage) = \beta_1 + \beta_2(years\ of\ experience) + \beta_3(years\ of\ edcuation) + \beta_4(days\ of\ work\ per\ month) + \beta_5(male) + \epsilon$$

$$\widehat{\log(wage)} = 6.97 + 0.04(years\ of\ experience) + 0.08(years\ of\ edcuation) + 0.04(days\ of\ work\ per\ month) + 0.52(male)$$

The resultant output exhibited heteroskedasticity with Breusch- Pagan test.

Breusch-Pagan test for heteroskedasticity -
Null hypothesis: heteroskedasticity not present
Test statistic: LM = 20.9536
p-value= 0.00032344

A heteroskedasticity-corrected regression was conducted and the regression results are given in table below.

Heteroskedasticity-corrected, using observations 1-103
Dependent variable: log_Wage

Table 16. Heteroskedasticity corrected Regression results

| Model | Unstandardized Coefficients | | t | Sig. |
	B	Std. Error		
1 (Constant)	6.85205	0.179961	14.028	<0.0001
Years of Experience	0.0700948	0.00900476	4.110	<0.0001
Years of Education	0.0366681	0.0110629	2.565	0.0013
Days of Work per month	0.0639675	0.00696114	5.871	<0.0001
Male	0.308431	0.140257	2.990	0.0302

Table 17: Robustness of the Model

Model	R Square	Adjusted R Square	F	Sig.
1	0.768692	0.759251	81.41957	.000

Dependent variable in the model is logarithmic transformation of wage earnings. The independent variables such as years of experience, years of education, days of work per month and the gender category of Male are all statistically significant as p value is well below 0.05. R square and Adjusted R square values indicate the robustness of the model as independent variables together explain more than 70 percent of changes in dependent variable. The model has overall significance with statistically significant F value.

5.9) Interpretation of the Model

As per the above model, a one-year increase in experience leads to 7 percent increase in monthly wage earnings. A one-year increase in education leads to 3.6 percent increase in monthly wage earnings. An addition of a day of work in a month leads to 6.3 percent increase in monthly wage earnings. Halvorsen- Palmquist correction of coefficient of dummy variable Male in the model shows that a switch of gender from female to male leads to 36 percent increase in monthly wage earnings.

6. Conclusion

The study concludes from the analysis of the sample data, Education, Experience and days of work have positive impact on monthly wage earnings. Experience of work is seen to be more impactful than years of education. A gender disparity in wage earnings is evident both in Mann-Whitney U test and log-level regression analysis. The categories of profession have significant influence on the wage earnings.

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