Delhi Business Review ✠ Vol. 18, No. 1 (January - June 2017)

EVALUATING THE IMPACT OF EDUCATION ON EARNINGS IN NEPAL

Hari Gopal Risal*
C.P. Gupta**

PURPOSE
THIS study contributes to the literature of return on investment in education and help policymakers while allocating the budget to education sector since education level causes significant increment in earnings in the context of Nepal.

Design/Methodology/Approach: *This paper has applied a Semi-log multivariate regression model using data from Nepal Labor Force Survey to provide empirical evidence in the entire analysis on this issue. Not just academic qualifications, but also there are several other factors which cause increase in income. We explore this fact to identify the impact of experience, age, training, gender, and other variables in their earnings.*

Findings: *The empirical evidence of this study has shown a direct relationship between the education and earnings and we estimated that an increase in education of people by 1 level causes 16.64% increment in their wages on an average. Apart from the academic qualification, their experiences in the similar field have statistically significant relationship (i.e., one level increase in experience causes 11.57% increase in monthly earnings). The training dummy is found to be statistically insignificant to cause increment in earnings which is also an interesting finding of the study.*

Research Limitations/Implications: *Due to having the low R-squared value after introducing dummies, we can suggest that there may be other quantitative and qualitative factors like ability of the individual and the contextual fact that may cause the increment in earnings, which can be the future scope of this study.*

Practical Implications: *Two major implications of this empirical study are: firstly, this will help policymakers while allocating the budget in education sector and secondly, encourage people towards higher education.*

Originality/Value: *This is an original research and also examines the discrepancies in earning caused by gender, marital status, and area of living and work.*

Key Words: *Secondary Data, Multivariate Regression, Inferential Analysis, Monthly Earnings, and Education.*

Introduction

As aptly quoted by Nelson Mandela, "Education is the most powerful weapon", it indeed is considered as a most powerful weapon in the world and gives an indication of civilization and development. It is also taken as the most valuable asset and basic requirement for prestigious jobs and to assume prominent

* *Assistant Professor – Finance and Account, Kathmandu University School of Management, Lalitpur, Nepal.*

** *Professor, Department of Financial Studies, South Campus, University of Delhi, Delhi, India.*

roles in organizations. Changes in public expenditure as a percentage of GNP, in respect of education was 1.8 in 1980 which increased to 3.2 in 1997 (Prakash, 2006). Dee (2004) found that the schooling increases the quality of civic engagement and knowledge. Further, he added that schooling significantly increased support for free speech by anti-religionists, communists, and homo-sexual. Dickson & Harmon (2011) opined a welcome trend in the current literature to consider (a) a broader concept of monetary private returns to education that considers earnings variance as much as average earnings, and considers variation in returns across the distribution of education; and (b) a wider consideration of non-monetary returns for both the individual and likely social returns. We can observe a massive investment in the education sector to make country more civilized and for the overall development. Becker (1962) in his work introduced the concept of treating investment in education as capital investment. It is a proven fact that the investment in education is most for knowledge, civilization, job opportunity, and for the overall development. But, the issue is that if people are investing a lot in their education, are they going to get better return on their investment in the form of higher prospective wages from their job? There is a need to address this issue and this study is aimed at it. Hence, the basic research question of this study is: Does investment in education lead to better returns in the form of higher wage?

Widely observed phenomenon in our Nepali context is the rampant mushrooming of schools (especially in private sector) from kinder garden to higher secondary level, colleges, and universities which has increased the access to people throughout the country. Apart from the formal education, people require many other skill based training and ability to perform in the real world. In order to present the fact about how much expenditure on education in Nepal is incurred by the Government, a comparative table no. 1 has been presented for last five years.

Table No. 1: Comparison of Education Budget with GDP and National Budget

Particulars	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**
GDP in NPR	13.75 trillion	15.40 trillion	17.06 trillion	19.67 trillion	20.75 trillion
National Budget in NPR	3.38 trillion	3.85 trillion	4.05 trillion	5.17 trillion	6.18 trillion
Education Budget in NPR	57.8 billion	63.9 billion	63.00 billion	80.5 billion	86.0 billion
Proportion of Education Budget in the National Budget	1.71%	1.66%	1.56%	1.56%	1.39%

Source: Ministry of Finance (2015-16). Estimates of Expenditure: Red Book FY 2015-16.

From the table no. 1, one can see that proportion of Education Budget in the National Budget is declining every year. Question that needs to be addressed is whether decline in education will have any bad impact on the wages of people of Nepal. Further, to supplement lower levels of the Government spending on education, people are increasing their own investment expenditure on the education. Then, another issue which emerges is – are people of Nepal getting sufficient returns on their efforts and investment in acquiring higher level of education and other necessary skills? Researchers have found that level of education has direct relationship with people's earnings and valued as the most important determinants of their wage and other facilities. Numerous existing studies in both developed and developing countries have shown that better-educated individuals earn higher wages, experience less unemployment, and work in better occupations (higher wages, greater job security, etc.) than their less-educated counterparts (Card, 1999). A study conducted by Punia & Kavitri (2014) examined the preferences of aspiring managers for career orientation on the basis of educational factors. Pillania (2004) studied the percentage expenditure on University and Higher Education to GDP in India for the year 2000-2001 and suggested that the higher education in India is in deep financial strain. In recent years, there has been considerable interest in whether measured correlations between schooling and earnings reflect the causal impact of schooling on earnings (Ashenfelter et al., 1999). This has led to

different ways of looking into the investment in education on earnings, health and well-being, etc. Blundell et al. (2004) in their study of United Kingdom (UK) have found an average return of 27% for those completing higher education versus anything less. Human capital earning function (HCEF) in determination of wage is the remarkable contribution of Mincer & Polachek (1974). But it is very hard to claim that the higher earning is an outcome of higher education and the reverse may be true. It can be argued that people with higher earnings choose to get more schooling.

Indeed, this study is not completely new to labor economists. This study aims at identifying the relationship between education level and multitude of other factors one of them being earnings. One major contribution of this study will be in terms of its data which varies from other countries in terms of availability and choice of schooling, date of joining school is not consistent in the country. Another is the model which is unique in its nature and validated using different diagnostic tests for the robustness. Further, this study will not only contribute to the existing evidences but also contributes at individual level for the human capital development. It can be further argued that higher education reduces the cost of training and motivating people for better productivity which ultimately leads to the higher earnings and civilization. Another argument can be to help the policy makers in understanding the causality between education and earnings and decide on the type of education to avail and make necessary investments. If we were to check the budget allocated by government in education sector, it still seems considerably low. Hence, the outcome of this research will be helpful for the government to increase its education budget by many times which ultimately causes the increase in GDP and overall development of the country. The study have been divided into three different parts: the first part (already discussed above) is introduction which gives a general overview of the research and rationale for choosing this particular area and some of the earlier research studies on this topic and their findings; the second part is the methodology and data analysis; and finally the findings and discussions have been presented.

Research Methodology and Data Analysis

Data

The data which have been considered for this study has been extracted from the Nepal Labor Force Survey 2008 (II). It is the second round of a multi topic national labor force survey carried out by Central Bureau of Statistics (CBS) from January to December 2008 that covered nationally representative sample of 16000 households from 800 Primary Sampling Units (PSU) equally distributed between urban and rural areas. The nature of data used here is cross sectional and research interest is to check whether empirical evidences hold true in context of Nepal or not. Total number of observations is 5322 and seven regressors have been used to check their impact on log monthly earnings of individuals. Some relevant data have been captured from the red book and relevant information has been captured from different websites.

Table No. 2: Summary Statistics of Data

Variable	Observation	Mean	Std. Dev.	Min.	Max.
logME	5322	8.577571	0.8168075	4.60517	16.1181
Education	5322	3.581924	1.816356	1	7
Experience	5322	2.803457	1.05179	1	4
AGE 2	5322	1182.345	778.9195	256	4900
Marital Status	5322	0.7643743	0.4244291	0	1
Training	5322	0.2157084	0.4113515	0	1
Area	5322	0.7136415	0.4521014	0	1
Gender	5322	0.7375047	0.4400317	0	1

Method

Semi-log model has been used for the regression analysis and diagnostic approach has been used to justify the appropriateness of the model. Log monthly wage is the dependent variable and level of education, work experience, and age are the independent variables. Training, gender, area, and marital status have been added further to address of endogeniety caused by omitted variables which also improves the R-squared and solve the issue related with heteroskedasticity and autocorrelation. In addition, a comparative analysis has been performed using those dummy variables.

The Model

The classical linear regression model (CLRM) is considered best linear unbiased estimate (BLUE) only when it is free from all biases stated in their assumptions. After passing all diagnonostic tests for multicollinearity, heteroskedasticity, and specification biases, the final and robust model used for the purpose of study is as below:

Log Monthly Earning

$$= \beta_0 + \beta_1 Education + \beta_2 Experience + \beta_3 AGE^2 + \beta_4 MSD_1$$

$$+ \beta_5 GENDERD_2 + \beta_2 AREAD_3 + \beta_7 TRAINING\ D_4 + \varepsilon$$

Variable Explanation

Log monthly earnings are the variable of research interest (dependent variable). The impact caused by several regressors on the log monthly earnings is captured using the above model. The wage and salaries payments in Nepal are practiced as monthly payments rather than weekly or some other patterns. The rationale behind using log monthly earning in place of monthly earning in the model can be explained with the help of symmetry plot and the histogram for skewness and kurtosis as shown in figure no. 1:

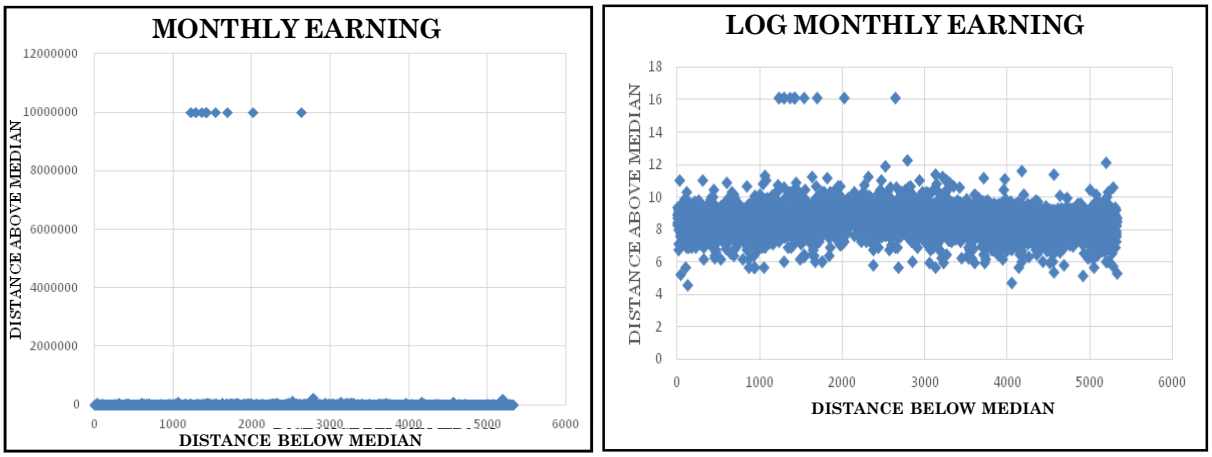

Figure No. 1: Symmetry Plot of Monthly Earning and Log Monthly Earning

Figure no. 1 symmetry plot suggests for the use of log monthly earning in place of monthly earnings, which is flat and the log monthly earning seems to better explain the linear relations. This is further confirmed after checking the skewness and kurtosis below.

Histogram for Skewness and Kurtosis: Monthly Earning and Log Monthly Earning

As suggested by Gujarati (2014) histogram have been plotted to explain the use of log monthly earnings in place of monthly earnings. The histogram for monthly earning is highly skewed and

does not express the normality of the distribution. Hence, the regressand used in the model Log Monthly Earning is justifiable.

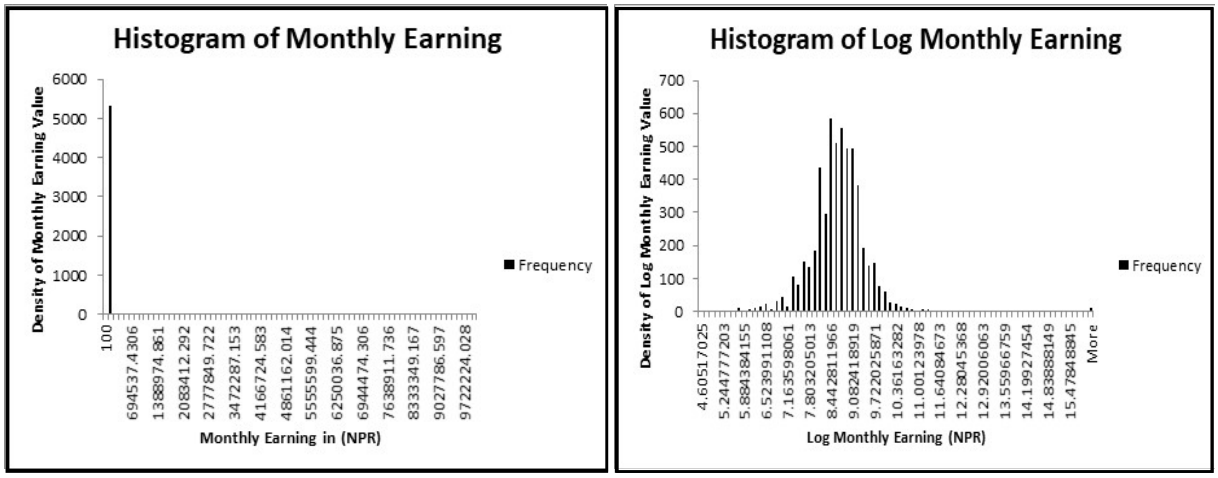

Figure No. 2: Histogram for Skewness and Kurtosis: Monthly Earning and Log Monthly Earning

Education

The main objective of this research is to study the causal relationship between education and the log monthly earnings and to support the empirical evidences in context of Nepal. The education variable has been defined as education level starting from 1 to 7.

Defined Level of Education
Illiterate = 0;
Literate (Formal/Informal), Class 1, 2, and 3 = 1;
Class 4,5, 6, and 7 = 2;
Class 8,9, and 10 = 3;
SLC pass= 4;
Intermediate (10+2) = 5;
Professional and Bachelor's degree = 6 and
Master's and above 7

Experience

The experience is also not in terms of years of work rather it is defined in terms of four different levels as: Level "1" is assigned for work experience of less than 1 year; level "2" for 1 to 5 years of work experience; level "3" for 5 to 10 years of work experience, and level "4" for experience above 10 years.

This study shows the relationship between one level upgrade in experience level and their log monthly earnings.

AGE^2

The rationale for using *AGE^2* in the model and not the AGE only is due to two reasons; the first one is: as a priori of life cycle hypothesis, age may have positive correlation with earnings up to certain

life and then starts falling. Also, the data considered includes age from 16 to 70 years; and the second is AGE^2 explains the model better (has a higher predictive power) than the AGE only.

Although data were available beyond 16 years to 70 years, the permitted age for labor in the country is 16 and generally people after 70 years of age face several health issues and most of the people get retired from both the full-time as well as part-time and any other short term consulting jobs too. Hence, few exceptional cases have been ignored for the purpose.

Dummies

As stated earlier, four dummies have been introduced with two basic purpose; first to improve the significance of the model and second to see the differences in earnings caused by gender, area, marital status, and the impact of training.

Marital Status D1 (Marital Status): "1" is assigned for married and "0" for all other categories; it tests whether the married people earn more than that of the unmarried or divorced.

Gender D2 : "1" is assigned for male and "0" for female; the rationale behind introduction of this dummy is to check whether there exists difference in log monthly earnings between male and female (caused by the gender); if yes by how much male employee earn more than the female employee.

Area D3 : "1" is assigned for people in urban areas and "0" for people in rural areas; main interest behind this dummy is to see whether there exists any difference in monthly earnings of people who work in rural and the urban area; if yes by how much the people in urban areas earn more than that of the people in rural areas.

Training 4: "1" is assigned for trained and "0" for untrained employees; it tests whether the training cause significant impact in the log monthly earnings.

"ε" stands for an idiosyncratic error term to account for unobserved heterogeneity.

It is the disturbance, or error term, or a random (stochastic) variable that has well-defined probabilistic properties. The disturbance term may well represent all those factors that affect log monthly returns but are not taken into account explicitly, this is the reason why we call them unexplained. Whatever is left unexplained in our model can be the scope for future research and can be explained more by reducing the "ε".

Robustness of the Model

This part starts with an ordinary least square method and continues with several approaches for diagnosis and robustness of the model.

Ordinary Least Square (OLS):

Log Monthly Earning

$$= \beta_0 + \beta_1 Education + \beta_2 Experience + \beta_3 AGE + \beta_4 AGE^2 + \varepsilon$$

Where,

β_0 = Constant

β_1, β_2, β_3, and β_4 are the coefficient of the independent variables education, experience, and age.

ε = An idiosyncratic error term to account for unobserved heterogeneity.

Table No. 3: Outcome of OLS

Source	SS	df	MS		Number of obs. = 5322 F (4, 5317) = 407.42	
Model	832.826811	4	208.206703		Prob > F = 0.0000	
Residual	2717.20901	5317	0.511041754		R-squared = 0.2346 Adj R-squared = 0.2340	
Total	3550.03582	5321	0.667174557		Root MSE = 0.71487	
logME	**Coef.**	**Std. Err.**	**t**	**P>|t|**	**[95% Conf.**	**interval]**
Education	0.1633849	0.0055086	29.66	0.000	0.1525857	0.174184
Experience	0.1067142	0.0118218	9.03	0.000	0.835386	0.1298898
AGE	0.0428462	0.0057953	7.39	0.000	0.0314851	0.0542073
AGE^2	-0.0004108	0.0000762	-5.39	0.000	-0.0005602	-0.0002615
_cons	6.777515	0.0933004	72.64	0.000	6.594608	6.960423

From table no. 3, we can see that all selected variables are significant at 5%. As per "2-t" rule of thumb, all individual t-values are above 2 which indicates it to be statistically significant. Further to this, all P> |t | = 0 shows it to be highly significant at 5% and 1% levels of significance respectively. The only problem here with the model could be observed with the R-squared which is only 0.2267 which is further tested and improved.

Test for Multicollinearity

In this part, to test whether there exists correlation and also to check collinearity issues among the selected independent variables following two tests have been performed: firstly, the correlation was checked and secondly, VIF and the Tolerance test have been performed.

Correlation among Coefficients

Table No. 4: Correlation Matrix

Correlation matrix of coefficients of regress model					
e(V)	Education	Experience	AGE	AGE^2	_cons
Education	1.000				
Experience	0.1155	1.000			
AGE	-0.1694	-0.3333	1.0000		
AGE^2	0.1443	0.2240	-0.9801	1.0000	
_cons	-0.0477	0.0812	-0.9312	0.9157	1.0000

The variables, education, and experience have a very low positive correlation which shows almost no correlation between them. There is negative correlation between age and education, age and experience. This fact gives us a signal that there is no positive collinearity among the variables of the model. However, the negative high correlation between experience and AGE^2 suggests for further check using VIF and Tolerance test to confirm the collinearity issue.

VIF and Tolerance Level test

As per the definition, "The Variance inflation factor (VIF) quantifies the severity of multicollinearity in an ordinary least square (OLS) analysis. It provides an index that measures how much the

variance (the square of the estimate's standard deviation) of an estimated regression coefficient is increased because of collinearity."

Table No. 5: Test for Multicollinearity

Variable	VIF	1/VIF
AGE	39.36	0.025408
AGE^2	36.66	0.027274
Experience	1.61	0.621208
Education	1.04	0.959349
Mean VIF	19.67	

It is considered that the VIF above 10 means very high multicollinearity as a rule of thumb and 4 is considered not very well. Here in our case, maximum VIF is far above the acceptable level in case of Age and it's squared. Hence, it is suggested to drop age and consider its squared value only. The rationale behind dropping the variable age and continuing with it squared value is due to retirement age policy and reduction in income after retirement. The tolerance level test is simply 1 divided by VIF and considered to be not collinear when it is close to 1. The results of VIF and tolerance level are the same.

Drop the Age and check for Multicollinearity

Dropping the variable age from the model, we can regress and check whether it solves the multicollinearity issue or not and test for VIF and tolerance level.

In the revised model, maximum VIF is 1.44 which confirms no issue related to multicollinearity. This way, we can claim it to be free from the multicollinearity issue.

Table No. 6: Test for Multicollinearity after dropping AGE

Source	SS	df	MS		Number of obs. = 5322 F (3, 5318) = 519.76	
Model	804.892685	3	268.297562		Prob > F = 0.0000	
Residual	2745.14313	5318	0.516198408		R-squared = 0.2267 Adj R-squared = 0.2263	
Total	3550.03582	5321	0.667174557		Root MSE = 0.71847	
logME	**Coef.**	**Std. Err.**	**t**	**P>|t|**	**[95% Conf. Internal]**	
Education	0.1702834	0.0054563	31.21	0.000	0.1595868	0.1809801
Experience	0.1358441	0.011202	12.13	0.000	0.1138836	0.1578046
AGE^2	0.0001412	0.0000152	9.30	0.000	0.0001114	0.000171
_cons	7.419834	0.0341879	217.03	0.000	7.352812	7.486856

.estat vif

Variable	VIF	1/VIF
AGE^2	1.44	0.693031
Experience	1.43	0.698834
Education	1.01	0.987687
Mean VIF	1.30	

Model Specification Test

There may exist the specification error when any of the independent variables is correlated with the error term. There are several causes for this specification error or bias; popular types are due to incorrect functional form, omitted variables, inclusion of irrelevant variables, simultaneity, and measurement error. Here, two popular types of specification tests have been performed; the Ramsey RESET test and the link test.

Ramsey RESET Test

It tests whether non-linear combinations of the fitted value help explain the response variable. Hence, it suggests whether non-linear functional form have the explanatory power and tells about the omitted variable.

Table No. 7: Ramsey Reset Test for Model Specification

(note: Experience^3 dropped because of collinearity)
Ramsey RESET test using powers of the independent variables
Ho: model has no omitted variables
F (8, 5310) = 16.15
Prob > F = 0.0000

The result of table No. 7 shows that the null hypothesis is rejected (Prob > F = 0.0000), which means that the model has explanatory power and passes the specification test. However, it is not the single tool to check for model specification. Hence, we proceed further to other tests before the confirmation.

Link Test

This is another very popular test to check the model specification. The Probability > F = 0.0000 and p>I t I = 0.0000 suggests that the model is appropriately specified.

Based on the result of table no. 8 (i.e., all significant at 5% and 1% level) of Ramsey RESET test and Link test, the model successfully passed the specification test and we continued further with our model for regression. However, a significant value of t implies that the model may have omitted variable bias. Hence, introduction of dummies will help to make the model robust.

Table No. 8: Link Test for Model Specification

Source	SS	df	MS		Number of obs = 5322	
					F (2,5319) = 813.45	
Model	831.505679	2	415.752839		Prob >F = 0.0000	
Residual	2718.53014	5319	0.511097977		R-squared = 0.2342	
					Adj R-squared = 0.2339	
Total	3550.03582	5321	0.667174557		Root MSE = 0.71491	
logME	**Coef.**	**Std. Err.**	**t**	**P>|t|**	**[95% Conf.**	**Interval]**
_hat	-5.813012	0.9444941	-6.15	0.000	-7.664608	-3.961416
_hatsq	0.394423	0.0546598	7.22	0.000	0.2872675	0.5015786
_cons	29.35988	4.074486	7.21	0.000	21.37221	37.34754

Introducing Dummy Variables

As of now, the model as per theory seems to be appropriate, valid, and with no omitted variables. However, the low R-squared value observed so far is not very encouraging. Based on theory, we are now introducing some extra variable as dummy which may contribute in the r-squared and also check whether there exists any difference in monthly earnings between male and female (Gender Dummy); is there any difference in earnings of people in Urban and Rural (Area Dummy); whether married people earn more than unmarried and divorced (Marital status Dummy), and impact of trainings on earnings (Training Dummy). After addition, the new model looks like:

Log Monthly Earning

$$= \beta_0 + \beta_1 Education + \beta_2 Experience + \beta_3 AGE^2 + \beta_4 MSD_1$$

$$+ \beta_5 GENDERD_2 + \beta_6 AREAD_3 + \beta_7 TRAINING\ D_4 + \varepsilon$$

Table No. 9: OLS with added dummies

Source	SS	df	MS		Number of obs. = 5322
					F (7, 5314) = 252.96
Model	887.290981	7	126.755854		Prob > F = 0.0000
Residual	2662.74484	5314	0.501081076		R- squared = 0.2499
					Adj R - squared = 0.2490
Total	3550.03582	5321	0.667174557		Root MSE = 0.707087

logME	**Coef.**	**Std. Err.**	**t**	**P>|t|**	**(95% Conf. Interval)**	
Education	0.16638	0.0057227	29.07	0.000	0.1551613	0.1775988
Experience	0.1157055	0.0113282	10.21	0.000	0.0934976	0.1379134
Age^2	0.0001094	0.0000155	7.07	0.000	0.0000791	0.0001397
Marital Status	0.140537	0.0256152	5.49	0.000	0.0903207	0.1907533
Training	0.0079531	0.0246037	0.32	0.747	-0.0402803	0.0561866
Area	0.1291996	0.0222512	5.81	0.000	0.0855781	0.1728212
Gender	0.2107579	0.0224665	9.32	0.000	0.1667144	0.2548014
_cons	7.171126	0.0390372	183.70	0.000	7.094598	7.247655

Result of table no. 9 (i.e., the P> |t | =0.0000), shows all variables to be significant at both the 5% and 1% level of significance except training. Introduction of dummies has also increased the value of R-squared to 0.2499 from 0.2267. The reason for training dummy not found significant maybe due to the definition of training. It is not stated well in the data about the duration of the training, its quality, and other qualitative characteristics.

Now, it is an interesting question for researcher on whether to drop the Training dummy or, not. As a priori, training must cause some impact on the skills and abilities, and should have a positive impact on the monthly earnings. Although it increases the F statistic when dropped, the training dummy does not contribute to improve R-squared value. The R-squared value with and without training dummy model is almost same (as shown in table no.10). Despite the statistical findings of training dummy being insignificant, it has been continued as per the theoretical understanding.

Table No. 10: OLS with added dummies after dropping training dummy

Source	SS	df	MS		Number of obs = 5322 F (6, 5314) = 295.16	
Model	887.238623	6	147.873104		Prob > F = 0.0000	
Residual	2662.7972	5315	0.50099665		R- squared = 0.2499 Adj R - squared = 0.2491	
Total	3550.03582	5321	0.667174557		Root MSE = 0.70781	
logME	**Coef.**	**Std. Err.**	**t**	**P>|t|**	**(95% Conf. Interval)**	
Education	0.1668104	0.0055652	29.97	0.000	0.1559003	0.1777205
Experience	0.1156348	0.0113251	10.21	0.000	0.0934329	0.1378367
Age^2	0.0001092	0.0000155	7.06	0.000	0.0000789	0.0001397
Marital Status	0.1399808	0.0255552	5.48	0.000	0.0898821	0.1900794
Area	0.1295187	0.0222274	5.83	0.000	0.0859438	0.1730936
Gender	0.2104463	0.0224439	9.38	0.000	0.166447	0.2544455
_cons	7.172168	0.0389007	184.37	0.000	7.095907	7.248429

Heteroskedasticity Test

This test is performed to know whether the variability of variables is equal or, unequal across the range of values. Our null hypothesis (H_o) here is that there exists homoskedasticity (i.e., constant variances); which is also a basic requirement to run the OLS. For the purpose, we have considered the BP test and the White test.

Breusch Pagan Test

This test model was developed in 1979 by Trevor Breusch and Adrian Pagan and further contributed by Cook & Weisberg (1983). The purpose of BP test is to check whether the estimated variance of the residuals from a regression is dependent on the values of the independent variables. In that case, heteroskedasticity is present. This tests fall under the category of Chi^2 test.

Table No. 11: BP Test for Heteroskedasticity

Breusch - Pagan / Cook - Weisberg test for heteroskedasticity
Ho : Constant variance
Variables : fitted values of log ME
chi^2 (1) = 71.81
Prob > chi^2 = 0.0000

Based on above calculation, we reject the null hypothesis and confirm that there is no heteroskedasticity issue and we can continue with the model.

White Test

This is a major contribution of White (1980) and his paper became one of the most cited one in the field of economics. The White test doesn't just test the heteroskedasticity but also tests for specification error.

Table No. 12: White test for Heteroskedasticity and Specification Error

White's test for Ho : homoskedasticity			
against Ha : unrestricted heteroskedasticity			
	chi^2 (31) = 45.86		
	Prob > chi^2 = 0.0417		
Cameron & Trivedi's decomposition of IM- test			
Source	chi^2	df	p
Heteroskedasticity	45.86	31	0.0417
Skewness	38.68	7	0.0000
Kurtosis	13.52	1	0.0002
Total	98.06	39	0.0000

Here the Prob> Chi^2 =0.0417 which is significant at 5% level and confirms that there is no issue of heteroskedasticity. Hence, both the BP test and White test passes the test for heteroskedasticity. Hence, the model considered for this study seems to be robust.

Regression with the Final Model

LogMonthlyEarning

$$= \beta_0 + \beta_1 Education + \beta_2 Experience + \beta_3 AGE^2 + \beta_4 MSD_1$$

$$+ \beta_5 GENDERD_2 + \beta_6 AREAD_3 + \beta_7 TRAINING\, D_4 + \varepsilon$$

All the required test have been performed to make the model robust and BLUE, the regression model gives us the following outcome:

Table No. 13: OLS with the Robust Model

Source	SS	df	MS	Number of obs. = 5322
				F (7, 5314) = 252.96
Model	887.290981	7	126.755854	Prob > F = 0.0000
Residual	2662.74484	5314	0.501081076	R- squared = 0.2499
				Adj R - squared = 0.2490
Total	3550.03582	5321	0.667174557	Root MSE = 0.70787

logME	**Coef.**	**Std. Err.**	**t**	**P>t**	**[95% Conf. Interval]**	
Education	0.16638	0.0057227	29.07	0.000*	0.1551613	0.1775988
Experience	0.1157055	0.0113282	10.21	0.000*	0.0934976	0.1379134
AGE^2	0.0001094	0.0000155	7.07	0.000*	0.0000791	0.0001397
Marital Status	0.140537	0.0256152	5.49	0.000*	0.0903207	0.1907533
Training	0.0079531	0.0246037	0.32	0.747	-0.0402803	0.0561866
Area	0.1291996	0.0222512	5.81	0.000*	0.0855781	0.1728212
Gender	0.2107579	0.0224665	9.38	0.000*	0.1667144	0.2548014
_cons	7.171126	0.0390372	183.70	0.000*	7.094598	7.247655

**significant at 1% level of significance.*

Results and Discussions

Major Findings

The fitted model has successfully established the causality between education and the earnings. Following are the key findings of the study:

One level increase in education causes 16.64 % increase in their monthly earnings on an average. One additional level increase in experience causes 11.57% increase in their monthly earnings on an average. Age has nothing much to do with their monthly earnings. It may be identified only if we categorize the age and continue the process. Female employee on an average earns 21% less than the male employee. People in rural areas on an average earn 13% less than the people in urban areas. Trained employees earn 0.8% more than untrained employees on an average. Married people are earning 14% more than unmarried. It may be due to some qualitative factors like family commitments, extra time, experiences, trainings, etc.

Conclusion and Recommendations

Based on the large data set with a final model derived after conducting diagnostic test for their robustness, the findings suggest for a massive investment need in the education sector to foster the economic growth of the country. This study gives a contradictory finding in case of relationship between age and the earnings. Most of the empirical evidences have shown a direct relationship between the age and the education but the negligible coefficient of age shows no relationship with the earnings. Similarly, the lower earnings of female suggests for some training and female-friendly work policy or the differential wage system. People in rural area earning less than the urban is justifiable as per the higher expenditure requirements; comparatively higher school fee of their children, house rents, and price discriminations. This study also captures the qualitative fact of earning behavior among married and unmarried or divorced people. It may be further studied by controlling their work hours and commitments. Countries having similar level of development stage can also use the method used in this study to test the causality between education, experience, and age with the earnings while forming policy related to wage and the education.

Most of the empirical evidences have said that the education and wages do have the direct relationship. For instance, Parajuli (1999), have also found that the returns to education in Nepal are 9.7%. Similarly, Lamichhane & Sawada (2009) have found the estimated rate of returns to education is very high among persons with disabilities, ranging from 19.4% to 33.2% controlling for endogeneity bias arising from schooling decisions as well as sample selection bias due to endogenous labor participation. Our findings shows that the one level increase in education causes 16.64 % increase in their monthly earnings on an average. Hence, on the basis of the findings of the study, the policymakers can improve their focus and common people can also benefit and continue with their education for both the learning and monetary gains.

References

Ashenfelter, O., Harmon, C., & Oosterbeek, H. (1999). A review of estimates of the schooling/earnings relationship, with tests for publication bias. *Labour Economics, 6*(*3*), 453-470.

Becker, G.S. (1962). Investment in human capital: A theoretical analysis. *The Journal of Political Economy, 70*(*5*), 9-49.

Blundell, R., Dearden, L., & Sianesi B. (2004). Evaluating the impact of education on earnings in the UK: Models, methods and results from the NCDS; *The Institute for Fiscal Studies,* WP03/20. Retrieved from *http://www.ucl.ac.uk/~uctp39a/BlundellDeardenSianesiJRSS.pdf*, Accessed on May 6. 2016.

Card, D. (1999). The causal effect of education on earnings. *Handbook of Labor Economics*, *3(*A)*,* 1801-1863.

Central Bureau of Statistics, National Planning Commission Secretariat. (2008). *National Labour Force Survey* 2008. Statistical Report. Retrieved from *http:://www.ilo.org/wcmsp5/groups/public/@asia/@ro-bangkok/@ilo-kathmandu/documents/publication/wcms_118294.pdf*, Accessed on September 4, 2016.

Cook, R. D., & Weisberg, S. (1983). Diagnostics for heteroscedasticity in regression. *Biometrika, 70*(1), 1-10.

Dickson, M., & Harmon, C. (2011). Economic returns to education: what we know, what we don't know, and where we are going—some brief pointers. *Economics of education review*, *30*(6), 1118-1122.

Dee, T.S. (2004). Are there civic returns to education? *Journal of Public Economics. 88*(*9-10*), 1697-1720.

Education is the most powerful weapon to change the world. (2009). Retrieved from *http://www.ngopulse.org/article/education-most-powerful-weapon-change-world*, Accessed on September 23, 2016

Gujarati, D. (2014). *Econometrics by example*. London, UK: Palgrave Macmillan. Retrieved from *http://charitythinking.weebly.com/uploads/4/5/5/4/45542031/[damodar_gujarati]_econometrics_by_example_manzoor_ahmad_.pdf*, Accessed on September 5, 2016.

Lamichhane, K., & Sawada, Y. (2009). Disability and returns to education in a developing country. Tokyo: University of Tokyo Research Center for Advanced Science and Technology. Retrieved from *https://pdfs.semanticscholar.org/8607/5b2505728119490e72477f9dab92ace2c30f.pdf*, Accessed on September 6, 2016.

Mincer, J., & Polachek, S. (1974). Family investments in human capital: Earnings of women. *Journal of political Economy*, *82*(*2, Part 2*), S76-S108.

Ministry of Finance (2015-16). Estimates of Expenditure: Red Book FY 2015-16. Nepal. Retrieved from *http://www.mof.gov.np/uploads/document/file/RedBook_20150714124721.pdf*, Accessed on September 5, 2016.

Parajuli, D. (1999). External efficiency and equity in Nepalese education, Mimeo, World Bank. Retrieved from *https://www.coursehero.com/file/p6m20jq/Parajuli-D-1999-External-efficiency-and-equity-in-Nepalese-education-mimeo/*, Accessed on September 3, 2016.

Pillania, R.K. (2004). Is Privatization Improving the Competitiveness of Indian Higher Education. *Delhi Business Review, 5*(2), 1-11.

Prakash, O. (2006). Business, Government and Education. *Delhi Business Review, 7*(*1*), 39-45.

Punia, B.K., & Kavitri. (2004). Career Orientation Preferences of New Age Managers: A Study Across Personal, Familial, Institutional, and Educational Domain. *Delhi Business Review, 15*(2), 57-69.

White, H. (1980). A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica, 48*(4), 817-838.