

THE IMPACT OF PARENTS' SOCIOECONOMIC STATUS ON ACADEMIC PERFORMANCE OF GRADE TWELVE STUDENTS: IN CASE OF DIRE DAWA CITY, ETHIOPIA

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ABSTRACT: *Education is essential for the development of society. The more educated the people of a society are, the more civilized and well-disciplined. Mainly, family has responsibility to socialize children for making them productive members of society. The main objective of this study was to analyze the impact of parents' socioeconomic status on academic achievement in case of grade twelve students. From three governmental secondary schools, there were 482 total numbers of students in 2017/2018 academic year and included in the study. Both primary and secondary source of data were used. To examine the impact of parents' socioeconomic status on academic achievement dummy variables multiple regressions was employed to analyze data. The results of final fitted model shows that family size, average monthly income, parents' occupation and educational level have statistically significant contribution for students' academic achievement at 5% level of significance. It can be concluded that family size has negative impact on the academic performance of students. Similarly, poor parents may have inadequate or limited resources that promote and support children's development and school readiness. It can be recommended community and government should work together on family planning and effective contraceptive use. Additionally, unemployment rate should be minimized through creating job opportunities.*

KEYWORDS: *socioeconomic status, academic performance, dummy variables multiple regression*

INTRODUCTION

Education is essential for the development of society. The more educated the people of a society are, the more civilized and well-disciplined. Mainly, family has responsibility to socialize children for making them productive members of society. The more the parents involve in the process of imparting education to their children, the more the children might excel in their academic career and to become the productive and responsible members of society (Hafiz M. et al., 2013). The social and economic development of the country is directly linked with student academic performance. The students' performance (academic achievement) plays an important role in producing the best quality graduates who will become great leader and manpower for the country thus responsible for the country's economic and social development (Ali et al., 2018). Student

academic performance measurement has received considerable attention in previous research, it is challenging aspects of academic literature, and science student performance are affected due to social, psychological, economic, environmental and personal factors. These factors strongly influence on the student performance, but these factors vary from person to person and country to country.

In most African countries and in the western world, socioeconomic status of family is usually linked with family's income, parental education level, parent's occupation and social status among their kindred and even at global level (Chidubem, E., et al., 2018). Academic Achievement is the excellence in all academic disciplines, in class as well as extra-curricular activities. Include excellence in sporting, behavior, confidence, communication skills, punctuality, assertiveness, Arts, Culture, and the like. The act of achieving or performing is something that has been done or achieved through effort: as result of hard work (Fan W., et al., 2011).

The education of a child starts at very young stage in the family. The parents are the first teachers of a child. This education is called informal education. The education plays the role of an instrument of social change which is imparted to the children initially in the home environment (Machebe C. et al., 2014).

Socio-economic status of parents means educational level of parents, the income of family, environment in the family and standard of living of the family of parents plays an important role in the academic achievement and social behavior of the students (Amarveer S. et al., 2014).

Statement of the Problem

According to Schneider J. and Coleman H. (2000), parents' income level have strong positive effect on the students' grades, and students from lower income families are less likely to succeed academically. He also revealed that parents with low educational level may have less expertise or information about how to interact with their children's education. This could result with poor students' achievement. Hence, parents' involvement indicators may have different in their children's schooling differently. This means that parents with higher involvement might place a higher value in education achievement.

Objective of the study: The objective of this study was to analyze the impact of parents' socioeconomic status on academic achievement in case of grade twelve students, Dire Dawa Administration.

Significance of the Study

The findings of this study may expose some factors that might be accountable for poor academic achievement of students'. The identified areas where government at different levels could come in to bridge the gap of educational attainment of students from low and high income earned background in the society.

LITERATURE REVIEW

According to Sclafani J. (2004), not only are children's educations influenced by the personal, educational background of their parents, but these personal experiences are highly connected to their economic background. Students come from more educated families and higher status of occupations tends high achievement values in academy, since low socioeconomic status of parents have been seen as hindrance to student's success and it could lead to poor academic performance (Amarveer S. et al., 2014).

Academic performance of students is very much influenced by numerous factors like Socio-economic Status of the parents, residential locality of the students, gender, age, school and class room environment and many more. Socio-economic Status of student's family or parents have great impact upon academic success (Rofikul M., et al., 2017).

According to Brent S. (1998), Parental occupational status is strongly associated with how people think about and act in school. He showed that the students from high level occupation are more likely to have the economic resources to purchase instructional materials and educational services (example, computers and tutor-tuitions) that are not available to students whose parents have low level occupational status.

Parent's income, educational level, occupation and family size are the basic components to influence students' academic achievement. Regarding this, Schneider J. and Coleman H. (2000) showed that parents' income level have strong positive effect on the students' grades, and students from lower income families are less likely to succeed academically. He also revealed that parents with low educational level may have less expertise or information about how to interact with their children's education. This could result with poor children achievement.

DATA AND METHODOLOGY

Study area and Study population

The finding was carried out in Dire Dawa administrative city which is located in the eastern part of Ethiopia 515 kilometer far from Addis Ababa. According to the 2007 population and housing census of Ethiopia, the total population of the Dire Dawa Administration was estimated to be 341,834; out of the total population around 233,224 were urban, whereas around 108,610 were rural population. The study was conducted on all grade twelve students found in government preparatory schools in 2017/2018 academic year. There were 482 total numbers of students in the academic year from three governmental preparatory schools were included in the study.

Inclusion and Exclusion Criteria

All grade twelve students from governmental preparatory schools were included in the study, whereas, students from private preparatory schools and self-examinees were excluded.

Instruments and Methods of Data Collection

Questionnaire: Is used to gather data by using both close and open-ended questions on the parents' socioeconomic status and academic achievement of students' relationship. The questionnaire was prepared in English and translated to local language Amharic for clarity and data quality realization.

Document assessment: Students' result from Ethiopian Higher Education Entrance Examinations (EHEEE) in 2017/2018 academic year from their schools' recorded by using their admission number as primary key. The researchers were explained the purpose of the study to the respondents and told to feel free to ask questions when they face difficulties in the questionnaire and the entrance result record were extracted from official website of federal education by using admission number.

Ethical Consideration

Permission to undertake the study was obtained from Dire Dawa University Research Directorate office and the respondents not to participate in the study respected.

Variables considered in the study

Dependent Variable: The dependent variable for the study was academic performance and it is measured by score from the Ethiopian Higher Education Entrance Examination (EHEEE) results in 2017/2018 academic year.

Independent variables: parents' demographic and socioeconomic variables, such as: Age, current marital status, education level, occupational status, average monthly income, family size, living house and number of family.

METHOD OF DATA ANALYSIS

Dummy Variables Multiple regression

One of the serious limitations of multiple-regression analysis is that it accommodates only quantitative response and explanatory variables. In this case how qualitative explanatory variables, called factors, can be incorporated into a linear model. Factors are included in multiple linear regression using dummy variables, which are typically terms that have only two values, often zero and one, indicating which category is present for a particular observation. A dichotomous factor can be entered into a regression equation by formulating a dummy regressor, coded 1 for one category of the factor and 0 for the other category. A polytomous factor can be entered into a regression by coding a set of 0 or 1 dummy regressors, one fewer than the number of categories of the factor. The "omitted" category, coded 0 for all dummy regressors in the set, serves as a baseline to which the other categories are compared. A model incorporating a dummy regressor represents parallel regression surfaces, with the constant vertical separation between the surfaces given by the coefficient of the dummy regressor. Consider a dummy-regression model with p quantitative explanatory variables and an m -category factor:

$$Y_i = \beta_0 + \beta_1 X_{i1} + \beta_2 X_{i2} + \dots + \beta_p X_{ip} + \gamma_1 D_{i1} + \gamma_2 D_{i2} + \dots + \gamma_{m-1} D_{i,m-1} + \varepsilon_i$$

Where:- $D_{i1}, D_{i2}, \dots, D_{i,m-1}$ are dummy variables and dummy variable coefficients $\gamma_1, \gamma_2, \dots, \gamma_{m-1}$ represents differences between each of the other categories of the factor and the reference category m , holding constant X_1, \dots, X_p .

Analysis of variance (ANOVA)

Analysis of variance is one of parametric statistical distributed methods used to test more than one means in the population by using the process of estimation. Analysis of variance tests the hypothesis that the means of two or more populations are equal. It is used to test the significance of regression based on partitioning of total variability in the response variable.

ANOVA summary table for multiple linear regression model is as follows

S.V	Sum of squares	Degree of freedom	Mean sum of square	F
Regression	SSreg	p-1	MSR = SSreg/p-1	$F_{cal} = MS_{reg}/MS_{res}$
Error	SSres	n-p	MSE = SSres/n-p	
Total	SST	n-1		

The Test of overall Multiple Linear Regression model is

H_0 : all regression parameter is equal to zero. i.e. $\beta_0 = \beta_1 = \beta_2 = \dots = \beta_K = 0$

H_1 : at least one regression parameter is different from zero.

The decision would be made accordingly; that is p value greater than α value the null hypothesis will not be rejected which indicates that the all of the coefficients are equal to zero. Otherwise the null hypothesis will be rejected at specified level of significance and this indicates the regression model is valid with at least one none zero coefficient.

Selection of covariates

The methods available to select a subset of the covariates to include in regression model are essentially. **Backward elimination of variables:** chooses the subset models by starting with the full model and then eliminating at each step the one variable whose deletion will cause the residual sum of squares to increase the least. This will be the variable in the current subset model that has the smallest partial sum of squares. Without a termination rule, backward elimination continues until the subset model contains only one variable (Collet, 2003).

MODEL ADEQUACY CHECKING

Test of multi-collinearity

Test of multi-collinearity is the situation that arises when the explanatory variables are linearly related to one another. If there is no perfect relationship between predictor variables there is no multi-collinearity between independent variables. The presence or absence of multi-collinearity

can be detected by computing VIF (Variance Inflation Factor) and which is calculated as follows:

$$VIF(\beta) = \frac{1}{1-R_i^2}$$

Decision, If VIF is less than 10 no multi-collinearity between independent variables, while VIF is greater than 10 then multi-collinearity occurred.

Normality

To test for **normality of the residuals**, we may examine a quantile-quantile plot or a p-p plot. The plots can be accompanied by tests based on the cumulative distribution of the residuals against that of the theoretical normal distribution with a chi-square test to determine whether there is a statistically significant difference. The null hypothesis is that there is no difference between the empirical and theoretical normal distribution. When the probability is less than .05, we need to reject the null hypothesis and infer that the residuals are not normally distributed.

RESULTS AND DISCUSSIONS

Descriptive Statistics

There were, 482 numbers of students from three governmental secondary schools in 2017/18 academic year were included in the study. Among those 482, the data were collected only from 438 students, whereas the remaining 44 students were not voluntary due to different reasons and some of them were not willing to return the questionnaire for the interviewers. The result from Table 1 shows that the respondents' maximum and minimum score from entrance examination in 2017/2018 academic calendar for selected area is 545 and 168 respectively and average score is 321.7. Similarly, average number of family size for selected respondents is 5.74 and standard deviation is around 2.26 per household. In other words, the average monthly household income is 3773 Birr and Standard deviation is 2102 Birr.

Table 1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Result	438	168.00	545.00	321.70 09	73.00838
Total number of family members	438	2	15	5.74	2.258
Average monthly income	438	1000	15000	3773.0 1	2102.676
Valid N (list wise)	438				

Students' perception summary statistics on socioeconomic influence

The result below Table 2 shows respondents perception on whether parents' education level had influence on academic achievement or not; 47.9 percent of respondents responded that there is no influence on their academic achievement. Regarding respondents' perception on whether parents' employment status had influence on academic achievement or not; 52.1 percent of respondents answered that there is no influence on their academic achievement. Concerning respondents' perception on whether large number of family size had inference academic achievement or not; 59.8 percent of respondents replayed that there is no influence on their academic achievement.

Table 2: Students' perception summary statistics on socioeconomic influence

Item	Response	Count	Percentage
Do you think that parents' education level influence academic achievement	Yes	228	52.1
	No	210	47.9
Do you think that parents' employment status influence academic achievement	Yes	210	47.9
	No	228	52.1
Do you think that large number of family influence academic achievement	Yes	176	40.2
	No	262	59.8

Dummy variables multiple regression analysis

The dependent variable (academic achievement) may be influenced by a number of factors simultaneously. To examine such relationships between a dependent variable and a set of independent variables, multiple dummy regression analysis can be utilized. The result below Table 3 shows that the final fitted model constructed by using backward elimination of covariates which starts with a null model and then include more variables one at a time with the test of significance of the new variables being added onto the model and eliminate the most insignificant variable in each step until there is no significant variable left outside the model. Therefore, based on P-value the covariates number of family, average monthly income, pensioner mother occupation, pensioner father occupation, unemployed father occupation, secondary educated father, diploma and above educated father and diploma and above educated mother have statistically significant contribution for students' academic achievement at 5% level of significance.

Table 3: Final dummy variables multiple regression fitted model

Model	Covariates	Unstandardized Coefficients		t	Sig.
		B	Std. Error		
14	(Constant)	282.191	6.904	40.872	.000
	Number of family	-3.340	1.763	-1.895	.048
	Average monthly income	.011	.002	7.336	.000
	Pensioner Mother occupation (ref[Self-worker])	-32.639	14.433	-2.261	.024
	Pensioner Father occupation (ref[Self-worker])	29.457	14.461	2.037	.042
	Unemployed Father occupation	-32.460	11.067	-2.933	.004
	Secondary educated Father(ref[uneducated])	3.570	1.867	1.912	.049
	Diploma and above educated Father	7.207	2.211	3.260	.001
	Diploma and above educated Mother(ref[uneducated])	3.809	2.020	1.886	.040

MODEL DIAGNOSTIC CHECKING**Analysis of variance test (ANOVA)**

The analysis of variance provides a convenient method of comparing the fit of two or more mean functions for the same set of data. The result from Table 4 below, the P-value 0.000 is very small number, leading very strong evidence to reject null hypothesis that means the mean of students' score does not depend on any of the predictors.

Table 4: Test of ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
14	Regression	364218.890	8	45527.361	9.939	.000
	Residual	1965088.929	429	4580.627		
	Total	2329307.820	437			

Test of Multi-collinearity

Test of multi-collinearity is used to test is the predictors are not too highly correlated with each other. The variance inflation factor is one of the important device to measure the existence of collinearity and as we can see from Table 5 below all VIF values are less than 10 and Tolerance is less than one, indicates there is no multicollinearity problem.

Table 6: Test of Multicollinearity

Covariates	Collinearity Statistics	
	Tolerance	VIF
Number of family	.676	1.480
Average monthly income	.996	1.004
Pensioner Mother occupation	.844	1.185
Pensioner Father occupation	.840	1.190
Unemployed Father occupation	.990	1.010
Secondary educated Father	.359	2.786
Diploma and above educated Father	.259	3.867
Diploma and above educated Mother	.409	2.447

Test of Residuals independency

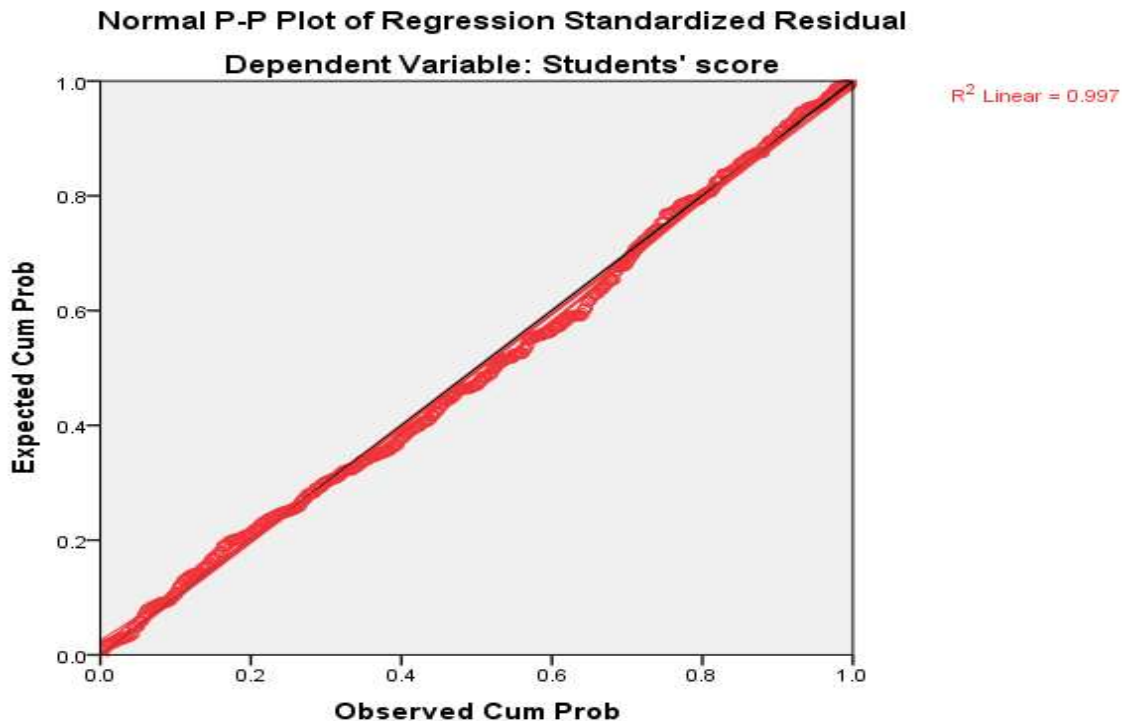
To check the residuals independency we can use the Durbin-Watson statistic. The test statistic possible values can vary from 0 to 4 to test residuals is independent or uncorrelated and the recommended test value to meet the assumption is greater than 1 and below 3. Therefore, the result from Table 7 below shows, the Durbin Watson value is 1.740, so we can conclude that the assumption of residuals is uncorrelated is satisfied.

Table 7: Test of Residuals Independency

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
14	.395	.156	.141	67.68033	1.740

Test of Linearity

One of the most common multiple Regression assumptions is test of linear relationship between outcome and predictor variables can be characterized by a straight line and tested by quantile-quantile (P-P) plot. As we can see from Figure 1 below, p-p plot indicates that closer the dots lie to the diagonal line, the closer to normal the residuals are distributed and means the relationship between students score and different predictors are linear. Therefore, the assumption of linearity is fitted.

**Figure 1: P-P plot test of linearity****Test of Normality**

Test of the error term is normally distributed with mean zero and constant variance and can be tested by using histogram plot. As we see from Figure 2 below, histogram plot indicating that normal curve with mean very small near to zero and almost 3 standard deviation. Therefore, the normality assumption test is satisfied.

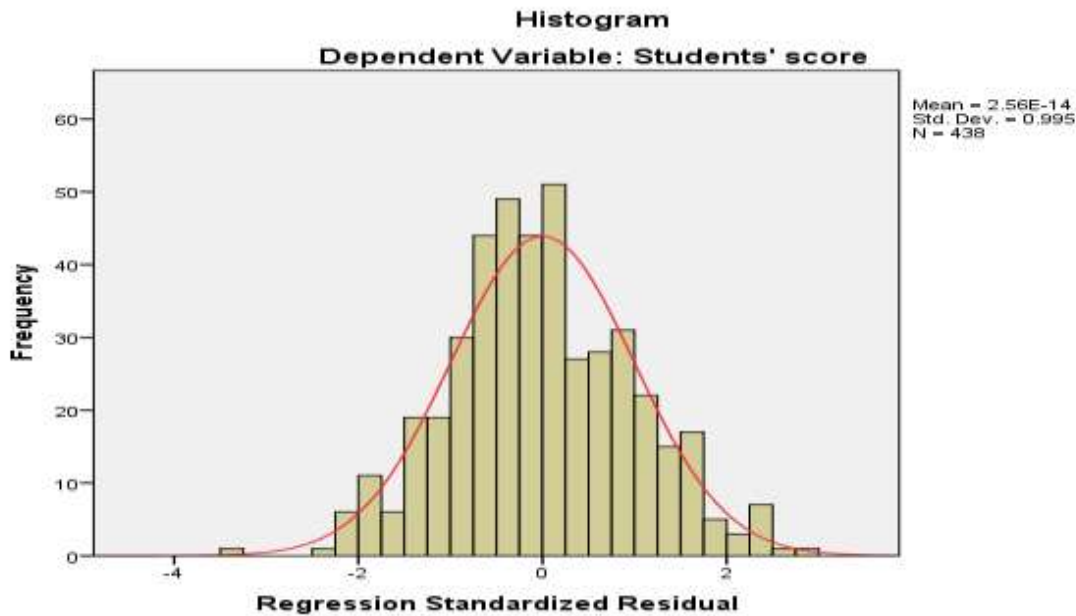


Figure 2: Histogram Plot test of Normality

INTERPRETATIONS

From the final fitted model the coefficient of family size ($\beta = -3.340$) indicates students' score from entrance examination is decreased by 3.340 points as one unit increase in family size when other variables control. Means large family size has negatively affected the students' academic achievement.

Family average monthly income coefficient ($\beta = 0.011$) reveals score of students is higher by 0.011 points, as one unit increase monthly average income of family, controlling for the other variables. Coefficient of pensioner occupation status of mother ($\beta = -32.639$) indicates student from pensioner mother, compared who have from self-worker, have score 32.639 points lower, other variables remaining constant.

Coefficient of pensioner father occupation ($\beta = 29.457$) shows score of the student from pensioner father, relative to self-worker, have 29.457 points higher, controlling other variables. Similarly, the coefficient of unemployed father ($\beta = -32.460$) is score of student from unemployed father, compared to self-worker, have 32.46 times lower, other variables constant.

Coefficient of secondary educated father ($\beta = 3.570$) indicates students from secondary educated father, compared to uneducated, have score 3.57 points higher, controlling other variables. Additionally, coefficient of diploma and above educated father ($\beta = 7.207$) shows students' score is increased by 7.207 points compared to from uneducated father. Coefficient of diploma and above educated mother ($\beta = 3.809$) indicates students' score is increased by 3.809 points relative to from uneducated mother, controlling other variables.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The multiple regression for dummy variables shows that number of contributing factors on students' academic performance were found. From those factors family size has negative impact on the academic performance of students. Indicates student from large size family leads to lowest academic performance.

Parents' average monthly income is found significant relationship on students' academic performance. It reveals that parents have high level of income can provide required materials for their children and create to opportunity of high academic achiever. In other words, poor parents also may have inadequate or limited resources that promote and support children's development and school readiness.

There was significant relationship between parents' education level and students' academic performance. Students from high educated parents revealed that better academic rank. More educated patents have way to inspire and help on the process of learning motivation and best academic achiever.

Occupational status of parents and students' academic performance were statistically significant. Specifically, father's occupational status affects the academic performance of students. In other words mother's occupation status is pensioner and has negative influence on their children's academic performance relative to self-workers.

Recommendations

Family size has negative impact on academic performance, therefore, community and government should work together on family planning and effective contraceptive use. It is strongly recommended that unemployment rate should be minimized through creating job opportunities. The finding reveals that mother's education level has vital role students' academic performance; therefore, both government and community have to take relevant actions to increase and encourage females' education. Finally, we recommend for any researchers, this kind of study should be done at lower grade levels in different study areas.

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