International Journal of Elementary Education
2022; 11(2): 55-63
http://www.sciencepublishinggroup.com/j/ijeedu
doi: 10.11648/j.ijeedu.20221102.16
ISSN: 2328-7632 (Print); ISSN: 2328-7640 (Online)

Statistical Analysis of Parental Factors on Academic Performance of Students: A Case Study on Samara Preparatory and Secondary High School

Abdu Hailu Shibeshi

Department of Statistics, College of Natural and Computational Science, Samara University, Afar, Ethiopia

Email address:
abduhailu01@gmail.com

To cite this article:
Abdu Hailu Shibeshi. Statistical Analysis of Parental Factors on Academic Performance of Students: A Case Study on Samara Preparatory and Secondary High School. *International Journal of Elementary Education*. Vol. 11, No. 2, 2022, pp. 55-63.
doi: 10.11648/j.ijeedu.20221102.16

Received: May 25, 2022; **Accepted**: June 23, 2022; **Published**: June 29, 2022

Abstract: Education is a process through which mankind transmits experience, new findings, and value accumulated over time to enable individuals and societies, to make all-around participation in the development process. The study was designed to assess the parental factors that affect students' academic performance in Semera preparatory and secondary high school. The study used a cross-sectional study design by preparing a well-organized questionnaire and the source of the data was primary data which was done by direct contact with respondents. Descriptive and inferential statistics were used to analyze the acquired data.. The sampling technique was stratified sampling method. The result of the study was obtained by using a frequency, histogram, hypothesis testing, and multiple linear regressions model. According to the findings, parents have a great contribution to the academic performance of the students (P-value = 000). In other words, the average mark of students can be predicted by parents asking the results of each examination of students, parents meeting homeroom teachers of the respondent, parent following up of respondent, family income of respondent, feeling the happiness of students, leisure time of students, family size of students. For this reason, parents should provide necessary materials to their students, motivate students using different methods that do not affect student's attitudes, give the advice to bring desired behavior of students, go to school and discuss educational and behavioral matters of their students with homeroom teachers and concerned bodies., and control and follow up their student's activities both inside and outside of school.

Keywords: Academic Performance, Multiple Linear Regressions, Samara, Afar, Ethiopia

1. Introduction

Education is a process through which mankind transmits experience, new findings, and value accumulated over time to enable individuals and societies to make all-rounded participation in the development process [1].

In this regard, education plays a key role in enhancing the economic process and improving individuals' level of fair and social development. The behavior and attitude of parents can have a significant impact on children's relationship with the school and the children's approach to education. Parental involvement supports the academic performance of children by enhancing their abilities. Learning styles and development levels with parental involvement highly affect educational success. Parental involvement demonstrates to the school teacher and child commitment and interest in the child's learning and translates into more positive attitudes, a higher level of motivation, and enhanced performance [2].

Outside the home, parents serve as advocates for the school. They can be voluntary to help with school activities or work in the classroom or they can take an action in the governance and decision-making necessary for planning, developing, and providing an education for the community's children. Parents often begin their participation by doubting their involvement that makes much difference and they are generally very gratified to discover what an important contribution they can make [3].

In this connection, school people and parents need to be aware that parents' involvement supports learning behavior and attitudes regardless of factors such as

parents' income educational level, and whether or not parents are employed [4].

All the children need the intellectual development, motivation, and skills that equip them for successful work and lifelong learning. These result from having quality learning involvement, challenging expectations, and consistent guidance and monitoring [5].

The lack of evidence linking parent involvement in governance and student achievement should not be taken to mean that parents should not be included in some aspects of school decision-making; however, the researchers and others have identified benefits other than student achievement which have been found to emerge from involving parents in governance [6].

These include the growth of parents' ability to serve as resources for the academic, social, and psychological development of their children, with the potential for much longer-term influence because of continued iteration with their children over time. The increases parent's skills and confidence, sometimes furthering their education and helping to upgrade their jobs, thus providing improved role models for their children.

The level of parental involvement has important implications for students' academic performance. Literature on the overall impact of parental involvement on students' academic performance in developing countries is minimal [7-9]. Whether the relationship exists and which type of parental involvement has effects are important to determine in countries, where parents often do not have the education to engage the students in school work or the resources to hire tutors. Does involvement in parent-teacher association meetings, volunteering at school, and talking to students about the importance of school matter? This study will begin to answer these questions and contribute to the literature on the relationship between parental involvement and academic performance in Baso preparatory and secondary school. The level of parental involvement can vary among families of different backgrounds.

The nature of parental educational aspiration, difficulties, and barriers are considered in the factors that contribute to the pattern of parental involvement. Numerous studies have established that different approaches to parental involvement produce various outcomes for parents and students. Most agree that parental involvement is a requisite for a student's school success; however, there are varying levels of what constitutes effective parent involvement. There are consistent trends but no one paradigm has emerged to be the dominant factor. Clarification needs to be found on the concerns of activities, goals, and desired outcomes of various levels of parental involvement and practice [10-12].

1.1. Operational Definitions

Academic performance: the outcome of students' effort in examinations.

Parental Factors: parenting a responsive environment that includes a positive interaction between parents and children.

1.2. Objectives of the Study

The general objective of the study is to determine parental factors that affect the academic performance of students. The specific objectives of the study are:

a) To identify the significance of parental factors that affects the performance of students.
b) To identify the aids that have to be provided by parents to improve the academic performance of their children.
c) To assess how parents follow up and motivate their children using different teaching processes.
d) To measure the extent of parents' role in the failure or success of students.

2. Methodology

2.1. Study Area and Population

This study was planned to research the role of parents on the academic performance of their children in Semera preparatory and secondary high school. The school is found in the Afar region, Semera town. It is located 591 km from the capital city of the country Addis Ababa. In this research, the target populations are all students in Semera preparatory and secondary school from grades nine to twelve.

2.2. Study Design

The sampling design used in this study was a cross-sectional study by preparing a well-organized questionnaire.

2.3. Source of Data

The study used the primary source of the data which was done by questionnaire method and gather all the required data from students of Semera preparatory and secondary high school on their academic performance as well as the role of parents of their children.

2.4. Sampling Technique

In precision of sample estimate of the population, depend not only on the sample size of the sample and sampling of the fraction but also on the variability of the heterogeneity of the population apart from the sample size. The only way of increasing the estimate was to devise a sampling procedure that was stratified and divides the population into classes based on the behavior of the population which was called strata. Since the study was based on the performance of each part of the students. So, the sampling technique used for this study was stratified random sampling. This research contains four strata. Those are:

Stratum 1 = grade nine students, Stratum 2 = grade ten students, Stratum 3 = grade eleven students, and Stratum 4 = grade twelve students. The sample size had selected by using a simple random sampling technique (SRS) from each stratum independently.

2.5. Sample Size Determination

As the sample size increases the precision of estimation of

population parameter increases. The most important steps in estimating the sample are:

a) Deciding the level of precision.
b) An equation that connects n – the level of precision.
c) Evaluate the sample size and whether it is consistent or not with the resources like cost, labor, time, and materials necessary.

Sample size determination is one of the first considerations in a planning sample survey. One of the major considerations in deciding sample has to do with the level of the error that one deep tolerable and acceptable.

$$n_0 = \frac{(Z\alpha/2)^2 S^2}{E^2} = \frac{(1.96)^2(0.9)^2}{(0.09)^2} = 384.16 \approx 385 \quad (1)$$

$$n = \frac{n_0}{1+\frac{n_0}{N}} = \frac{385}{1+\frac{385}{1808}} = 318 \quad (2)$$

N==1808: the target population, n =318: total sample size needed for study, E =0.09: margin of error or level of precision from the previous study, Z=1.96: the critical values of standard normal cumulative distribution that correspond to $\frac{\alpha}{2}$, α=significant level.

Then the sample size for each stratum was calculated by the formula

$$nh = \frac{n*Nh}{N}$$

Table 1. *The number of stratum with their sample sizes.*

Stratum number	Grade	Stratum	Sample size
1	Nine	N1 = 827	n1 =145
2	Ten	N2 =543	n2 =96
3	Eleven	N3 = 185	n3 =33
4	Twelve	N4 = 249	n4 =44
Total		1808	318

Source: Semera preparatory and secondary high school dean office and own computation, 2021.

2.6. Study Variables

2.6.1. Dependent (Response) Variable

The dependent variable for this study is the average mark of students scored in the first semester of 2021 G.C.

2.6.2. Independent (Explanatory) Variables

Independent variables are variables that provide to explain the response variable.

Table 2. *Coding of categorical variables.*

Variables	Coding of categories
Father Educational level	1=illiterate, 2=elementary and secondary 3=diploma, 4=bachelor degree and above
Mother Educational level	1= illiterate, 2= elementary and secondary 3= diploma, 4=bachelor degree and above
Father Occupation	0=farmer 1=merchant 2=employee
Mother Occupation	0=farmer 1=merchant 2=employee
Money is given to satisfy their basic requirements	1=sufficient, 2=insufficient 3=highly sufficient, 4= highly insufficient
Way of giving motivation to students	3=by rewarding 4=by enforcing 5=by advising
Parents follow up	0=No, 1=Yes
Having parents	0=No, 1=Yes
Feeling happiness while going to school	0=No, 1=Yes
Parents meet homeroom teachers	0=No, 1=Yes
Leisure time	0=No, 1=Yes
Comfortable study place	0=No, 1=Yes
Parents as results of each examination	0=No, 1=Yes

2.7. Statistical Methods of Data Analysis

2.7.1. Descriptive Statistics

Descriptive Statistics are used to compare or describe data using tables, graphs, and pie-chart and it is a collection, organization, summarization, and presentation of data in a meaningful full form by using different charts. It may be computed by the measure of central tendency (mean, median, and mode) and measures of variation (range, variance).

Frequency distribution is a way of displaying the raw data in an organized manner or a tabular arrangement of data where the data is grouped into different interval and then the number of observation that belongs to each interval is determined.

2.7.2. Inferential Statistics

Multiple Linear Regression Model: Even though the independent variables are categorical researchers use a multiple linear regression model for the continuous response variable. Multiple linear regression models that used to know the relationship between one dependent variable and two or more independent variables. The general model for multiple

linear regression analysis in which a response (Y) is related to a set of quantitative independent variables (x_i) is given by

$$Y = \beta_o + \beta_1 X_1 + \beta_2 X_2 + ... + \beta_k X_k + \varepsilon_{ij} \quad (3)$$

Where: Y = the response (dependent) variable

β_o = Y-intercept when each X = 0: $\beta_1, \beta_2 .... \beta_k$ are unknown parameters. i=1,2,……k: X_1, X_2, …, Xk are explanatory (independent) variables and ε_{ij} eij = error term of the model.

Hypothesis testing for ANOVA

Test of overall model parameter

Step 1: H0: β0= β1=β2=……..= βk=0 whereas the alternative hypothesis is

H1: at least one of βi is different from zero for i=0, 1, 2……., k

Step 2: Specify α level of significant.

Step 3: Test statistics.

F_{cal}= Regression mean square/Residual mean square,

F_{cal} = (SSR/k-1)/(SSE/n-1),

F_{cal} = MS_R/MS_{RES}, where MSR=the regression mean square with k-1 degree of freedom, MSE=mean square of error with n-k-1 degree of freedom,

Step 4: Decision: If $F_{cal}>F_{tab}$or I value <α then Ho will be rejected at a given significance level.

Step 5: Give a conclusion based on the above decision.

Table 3. *ANOVA for the regression analysis model is given as follows.*

Source of variation	Sum of square	Degree of freedom	Means sum of square	F
Regression	SSR	k-1	SSR/k-1	
Error	SSE	n-k	SSE/n-k	$\frac{SSR/k-1}{SSE/n-k}$
Total	SST	n-1		

Test of individual parameter

Step 1: Ho: βi=0 vs. H1:βi≠0. i=1,2,3……p.

Or Ho: the variable has no significant effect on the response variable.

H1: the variable has a significant effect on the response variable.

Step 2: Specify α level of significant.

Step3: Test statistics.

For a large sample (n>30),

Step 4: Decision $z_{cal}>z_{tab}$ or p-value <α, then reject Ho at a given significant level (α).

Step 5: give a conclusion based on the above decision.

2.8. Parameter Estimation of the Model

The model parameter was estimated by using the least square estimation method.

This is given by:

$$\hat{\beta} = (x'x)^{-1}x'y$$

Where y=n*p, invertible matrix of coefficient, β= px1 vectors of regression that was estimated from the data.

2.8.1. Checking Linearity

The partial plot is used to check the linearity assumption of the MLR model it shows linear probability in which the given predictor variables are linearly related to the dependent variable.

2.8.2. Checking Normality of Error Terms

Normal probability plot: used to check normality assumption. That means the error terms follow a normal distribution with a mean of zero and a standard deviation is one.

2.8.3. Checking Homoscedicity

An important assumption is that the variance in the residuals has to be homoscedasticity or constant.

2.9. Model Adequacy Checking

This is a method of checking whether the fitted model is adequate for modeling the data or not and whether the required assumptions are valid. This would be through the following:-

Residual analysis is a measure of variability that is left unexplained by the regression model. Thus, any departures from the assumption on the errors should show up in the residuals.

Its analysis is effective through plotting. These plotting are

a) Normal probability plot.

b) The plot of residuals again fitted the value.

c) Variance Inflation Factor.

Model adequacy is also checked by the coefficient of determination (R^2 and R^2_{ajd}). For computation to R^2=explain variation/total variation.

3. Results and Discussions

All the required information is gathered from 318 students in the Semera preparatory and secondary school to investigate the parental factor affecting students' academic performance. The objective of this section is to discuss and explain the output SPSS of the study in the table, graphical, and soon form which used to be clear and easily understandable.

3.1. Descriptive Statistics

Descriptive statistics are statistics described by frequency table, bar chart, histogram, and pie chart. A frequency table is a way of displaying chaos of number in an organized manner or a tabular arrangement of data where the data is grouped into the different interval and then the number of observation that belongs to each interval is determined.

Table 4. *Mother occupation of the respondent.*

		Frequency	Percent	Valid Percent	Cumulative Percent
	Farmer	110	34.6	34.6	34.6
	Merchant	107	33.6	33.6	68.2
Valid	Employee	101	31.8	31.8	100
	Total	318	100.0	100.0	

From Table 4 mother occupations of students, about 34.6% are farmers, about 33.6% are merchants and about 31.8% are an employee.

Table 5. *Money is given to the respondent.*

		Frequency	Percent	Valid Percent	Cumulative Percent
	Sufficient	119	37.4	37.4	37.4
	Insufficient	95	29.9	29.9	67.3
Valid	highly sufficient	100	31.4	31.4	98.7
	highly insufficient	4	1.3	1.3	100.0
	Total	318	100.0	100.0	

Table 5 shows the amount of money given to respondents to satisfy their basic requirements. About 37.4% of students get sufficient money; about 29.9% of students get insufficient, about 31.4% of students get highly sufficient and about 1.3% of students get highly insufficient money.

Table 6. *Parents follow up of respondent.*

		Frequency	Percent	Valid Percent	Cumulative Percent
	No	146	45.9	45.9	45.9
Valid	Yes	172	54.1	54.1	100.0
	Total	318	100.0	100.0	

From the above table, about 45.9% of students didn't get parent's follow up and 54.1% of students did get a parent's follow-up.

3.2. Inferential Analysis

Inferential statistics is a process of conclusions about the population based on the sample taken from the given population.

3.2.1. Multiple Linear Regression Analysis

A statistical model that was used in the study is the multiple linear regression model. Since the model have qualitative variable the general model for multiple linear regression analysis is used to check the effects of many qualitative or quantitative independent variables on a continuous single response. It is used to know the relationship between the continuous response variable (quantitative variable) and the explanatory (either quantitative or qualitative variable).

The model summary table gives the multiple correlation coefficient, R = .970, and adjusted R square (.926), this indicates that 92.6% of the variance can be predicted from the independent variables i.e the variance average mark of students. The model is adequate because the R^2 value becomes unity that is greater than 0.70. In other words, the average marks of students can be predicted by parents asking the results of each examination of the respondent, the father's education level of the respondent, the comfortable study place of the respondent, the way of giving motivation of respondent, parents meet homeroom teachers of respondent, mother occupation of respondent, money given to the respondent, having parents of the respondent, parent follow up of respondent, family income of respondent, mother education level of respondent, feeling the happiness of respondent, father occupation of the respondent, leisure time of respondent, family size of the respondent. The remaining 7.4% of the variation in the average mark of students is explained by the variables which are not included in the study.

Table 7. *Model Summary.*

Model	R	R Square	Adjusted R Square	Std. The error in the Estimate
1	.970[a]	.941	.926	2.4719

Table 8. *ANOVA (Analysis Of Variance).*

Model		Sum of Squares	Df	Mean Square	F	Sig.
	Regression	8528.778	22	387.672	90.939	.000[b]
1	Residual	1257.708	295	4.263		
	Total	9066.486	317			

The sig. value of 0.000 indicates that the combination of these variables significantly ($p < .001$) predicts the dependent variable, i.e average mark of students. Based on the analysis of variance tables we have to test the overall test of the regression model the following producers are important.

Steps

1) Stating null and alternative hypothesis.
2) H0 $\beta_1 = \beta_2 = \ldots = \beta_{15} = 0$ it means all explanatory variables have no significant impact on the fitted model.
3) H1 $\beta_j \neq 0$, for at least one j (j=1,2,---,15). It means for at least one's βj's have a significant effect on the fitted model.
4) Level p -values of significance ($\alpha = 0.05$).
5) Test statistics is F-test= 63.445.
6) Decision making; reject H_0 if ($F_{cal} > F_{\alpha}(k, n-p)$, p-values=0.05).

Where k is number of explanatory variables.

From the ANOVA tables, the p-value is 0.000. This is less than the level of significance (0.05). So as it can be concluded that at a 5% level of significance at least one of the βj has a significant impact on the regression model. The overall model is statistical significance for the data.

Table 9. *Correlations for continuous variables.*

		Average mark of respondent	Family income of the respondent	Family size of the respondent
Average mark of respondent	Pearson Correlation	1	.002	-.947**
	Sig. (2-tailed)		.984	.000
	N	318	318	318
Family income of the respondent	Pearson Correlation	.002	1	.042
	Sig. (2-tailed)	.984		.659
	N	318	318	318
Family size of the respondent	Pearson Correlation	-.947**	.042	1
	Sig. (2-tailed)	.000	.659	
	N	318	318	318

From the above correlation table, there is no highly correlate between independent variables family income and family size. This satisfied the assumption of the absence of multicollinearity. And we have also seen highly correlation between family size and the average mark of students, this satisfies the assumption of linearity.

3.2.2. Estimation of Model Parameters

The method of least square is a standard approach to regression analysis to the approximate solution of the over-determined system. i.e sets of equations on which there is more equation than unknowns. "Least squares" means that the overall solution minimizes the sum of squares of errors made in the result of every single equation.

Table 10. *Result of Multiple linear regression.*

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	91.963	2.329		39.484	.000
	The family income per month	-3.039E-005	.000	-.007	-.190	.850
	Family size of the respondent	-4.047	.247	-.772	-16.382	.000
	Parent follow up	1.079	.546	.059	1.975	.050
	Leisure time of respondent	1.584	.722	.087	2.194	.031
	Comfortable study place	.573	.842	.026	.681	.498
	Feeling happiness of respondent	-1.853	.626	-.102	-2.960	.004
	Having parents of students	.259	.578	.014	.448	.655
	Parents meet homeroom teachers of respondent	1.260	.646	.067	1.952	.050
	Parents ask results of each examination of respondent	2.940	.683	.154	4.302	.000
	F. occupation merchant	-.296	.616	-.015	-.482	.631
	M. occupation merchant	1.024	.637	.055	1.606	.012
	M. occupation employee	1.393	.764	.062	1.823	.042
	F. education ele & secondary	.398	.671	.020	.592	.555
	F. education diploma	.511	.738	.023	.693	.490
	F. education bachelor degree	.659	.819	.003	.072	.943
	M. education ele &secondary	-.777	.871	-.038	-.892	.375
	M. education diploma	-.905	.827	-.048	-1.094	.277
	M. education bachelor degree	.117	.960	.006	.122	.903
	Insufficient money given	-1.498	.820	-.079	-1.826	.071
	Highly insufficient money given	-.523	.920	-.029	-.569	.571
	way of giving motivation by enforcing	-.154	.806	-.007	-.191	.849
	way of giving motivation by advising	1.023	.711	.056	1.439	.154

The fitted regression model mathematically given as:

$$Y = \mu + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7 + \beta_8X_8 + \ldots + \beta_{15}X_{15}$$

Where Y= average mark of students that score in the first semester, μ=the overall mean, X_1= father occupation, X_2 = mother occupation, X_3=father education level, X_4=mother education level, X_5=money given to the respondent, X_6=family income per month, X_7 =family size, X_8=parents follow up, X_9=way of giving motivation, X_{10}=leisure time, X_{11}=comfortable study place, X_{12}=feeling happiness, X_{13}=having parents, X_{14}=parents meet homeroom teacher, X_{15}=parents ask the result of the examination.

From the result, the overall mean: μ = 91.963 indicates when other explanatory variables assume the value zero. So the average mark of students is 91.963 [12, 13]. The value β_{21}=1.393 tells us that the mean average mark of students with a mother's occupation employee is more about 1.393 than the mean average mark of students whose mother occupation is a farmer. In addition, β_{22} = 1.024 shows students whose mother occupation is the merchant is 1.024 times more likely to have a good average mark of students as compared to students whose mother occupation is farmer [14].

The coefficient table 1.079 indicates students whose parents follow them frequently are more likely to have good average marks than students whose parents do not follow up with them frequently. Similarly, the coefficient value of -4.047 indicated as per unit change in family size the average mark of students decreases by the amount of -4.047. Moreover, the beta value from the table, 0.659 shows students whose father's education level of bachelor's degree and above are about 0.659 times more likely to have good average marks than those whose father's education level are illiterate [15]. And also Father's education level whose diploma makes students 0.511more likely to have a good average mark as compared to students whose father's education level is illiterate. Finally, the father's education level illiterate is 0.398 less than that of students whose father's education is in elementary and secondary [16].

3.2.3. Test of Individual Parameter

If the overall F test rejects the null hypothesis, the test of the individual parameter must be executed to identify which independent variable significantly predicts the dependent variable.

Step 1: Hypothesis test (null or alternative test).

H_0: B_i=0 versus H1: B_i is not equal to zero.

Step 2: level of significance or alpha (α=0.05).

Step 3: test statistics or by taking p-values compared with (α=0.05).

Step 4: Decision making: reject H_0 if p-values less than alpha values.

Generally, these individual tested variables are significant variables that reject the overall test statistics and more explain the dependent variable average mark of students.

3.2.4. Checking Adequacy of Model

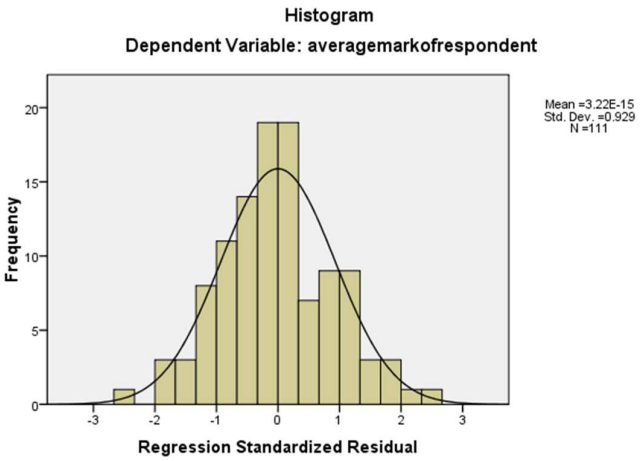

Figure 1. *Distribution of average marks of the students.*

From the above figure 1 normality assumption is satisfied.

From Figure 1 it can be observed that the normality assumption is satisfied. This means the residual of the student's average mark is a normal distribution (we can observe that the dependent variable is normally and independently distributed with a mean ($3.22*10^{-15}$≈0) and variance (0.929≈1|) and indicate that the residual is approximately normally distributed with μ~ (0, 1) so the normality assumption is satisfied [17].

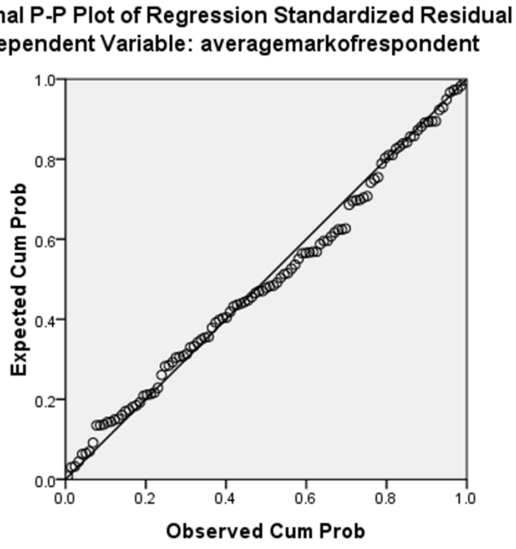

Figure 2. *Probability plot of the average mark of the student.*

From Figure 2 one can conclude that the model becomes normal. Because the plot of the ordered standardized residuals is approximately the same as the ordered normal scores. Under normality assumption, the plot indicates a nearly straight line with an intercept of zero and a slope of one (these are the mean and standard deviation of residuals respectively). Generally, the linearity and normality assumptions are satisfied as we have seen from the figure above [18].

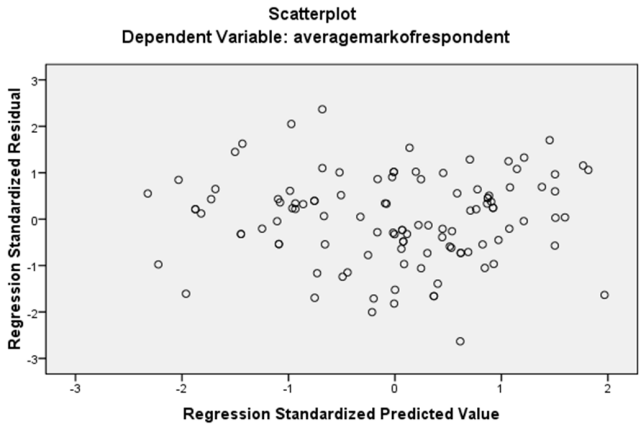

Figure 3. *Scatter plot of the average mark of the students.*

From the above scatter plot it can be concluded that error terms are normally distributed. And the assumption of homoscedasticity (constant variance) is satisfied. Because the dots are scattered (dots do not create a pattern), it indicates the data meet the assumptions of the errors being normally distributed and the variances of the residuals being constant [19].

4. Conclusion and Recommendation

It is important to note that the academic performance of the students is depending on many factors like environment, parental school, teacher, friends, and mental factors. But if parents are fully aware and fully involved in the education of their children, the remaining factors or limiting agents can be solved or reduced. For example, parents can increase the interest of students, make students choose the best academic friends, and create a conducive environment and good behavior for their students that have a positive impact on their academic performance of students.

Among the total family of students, 11.7% of families had an income of 1000 birr, about 13.51% of families had 2000 birr per month, about 11.71% of families had 3000 birrs, about 6.3% of families had 2500 birr per month, and about 9.1% of them having 5000 birrs per month. In the same fashion, we can interpret other income levels of the family. Even there are some families whose per month income is only two hundred as shown in the bar graph above. Results showed that parents have a great contribution to the academic performance of the students. In other words, the average marks of students can be predicted by parents ask results of each examination of students, parents meeting homeroom teachers of students, parents following up of students, family income of respondents, feeling the happiness of students, leisure time of students, family size of students.

Based on the research finding parents should: Provide necessary materials to their students, Motivate students using different methods that do not affect student's attitudes, Give the advice to bring desired behavior of students, and Go to school and discuss educational and behavioral matters of their students with homeroom teachers and concerned bodies., and Control and follow up their students' activities in and out of school. Similarly, a teacher should:- Discuss educational matters with parents, Increase the awareness of parents whenever they meet parents and Create a conducive environment for students to increase their interest in learning for students who learn in the school. Finally, Students should: Propose their needs to their parents whenever required, Openly respond to parents on academic matters, Use properly their time to study, help their parents, and for other things They have to confess to their parents with what is necessary and helpful for learning.

References

[1] Beyessa, F. (2014). Major Factors that Affect Grade 10 Students' Academic Achievement in Science Education at Ilu Ababora General Secondary of Oromia Regional State, Ethiopia. International Letters of Social and Humanistic Sciences, 32, 118-134.

[2] Rein Hartz J., Beach M. D. (1997). Teaching and Learning in the Elementary school: Focus on curriculum. New Jersey: Prentice-Hall.

[3] Tesfaye, T., Yitbarek, S. Tesfaye, A. (2010). Status of Science Education in Primary Schools of Addis Ababa. City Government of Addis Ababa Education Bureau.

[4] Weil-Barais, W. (2001). Constructivist approaches and the teaching of science. Prospects: quarterly review of comparative education, XXXI (2), 187-196.

[5] Jonassen, D. H. (1991). Objectivism versus constructivism: Do we need a new philosophical paradigm? Educational Technology Research and Development, 39 (3), 5-14.

[6] Dahar, M. A. (2011). Effect of the Availability and the use of Science Laboratories on Academic Achievement of Students in Punjab (Pakistan). European Journal of Scientific Research, 51 (2), 193-202.

[7] Hofstein, A., Lunetta, V. N. (2004). "The laboratory in science education: foundation for the 21st century". Science Education, 88, 28-54.

[8] Hofstein, A. (2004). "The laboratory in chemistry education: thirty years of experience with developments, implementation and evaluation". Chemistry Education Research and Practice, 5, 247-264.

[9] Lunetta V, N., Hofstein A., Clough M., (2007). "Learning and teaching in the school science laboratory: an analysis of research, theory, and practice". Handbook of research on science education. (pp. 393-441), Lawrence Erlbaum, Mahwah, NJ.

[10] Hofstein, A., Lunetta, V. N. (2003). The Laboratory in Science Education: Foundations for the Twenty-First Century. Science Education. The Pennsylvania State University, University Park.

[11] Tenaw, Y, A. (2015). Effective strategies for teaching chemistry. International Journal of Education Research and Reviews, 3 (3), 078-084.

[12] Hunde, A. B., Tegegne, K. M. (2010). Qualitative Exploration on the Application of Student-centered Learning in Mathematics and Natural Sciences: The case of Selected General Secondary Schools in Jimma, Ethiopia. Ethiop. J. Educ. & Sc., 6 (1).

[13] Mahathir M. (1991). The way forward. Paper presented to the Malaysian Business Council. Retrieved from: http://vlib.unitarklj1.edu.my/htm/w2020.htm

[14] Teshome, Y. (2007). A policy White paper prepared by Education and Ministry of capacity building on undergraduate and graduate degree programs mix and student placement in the expanding higher education system in Ethiopia.

[15] Samuel, B., Welflord, A. G. (2000). Practical activities in Ethiopian secondary physical sciences: Implications for policy and practice of the match between the intended and implemented curriculum. Research Papers in Education, 15, 185-212.

[16] CSA. (2008). Central Statistical Authority (CSA) of Ethiopia. The 2008 National Statistics. http://www.csa.gov.et/text_files/2008_national_statistics.htm

[17] Biru, A., et al., (2010). Afar National Regional State Programme of Plan on Adaptation to Climate Change, Samara.

[18] Negassa, O. (2014). Ethiopian Students' Achievement Challenges in Science Education: Implications to Policy Formulation. AJCE, 4 (1).

[19] Tesfamariam, G., Lykknes, A., Kvittingen, L. (2014). Small-scale Chemistry for a Hands-on Approach to Chemistry Practical Work in Secondary Schools: Experiences from Ethiopia. AJCE, 4 (3), Special Issue (Part II).