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## PUNJAB EDUCATION FOUNDATION'S ROLE IN ENHANCING LITERACY RATE: A CASE STUDY OF MULTAN DISTRICT- PAKISTAN

**Prof.Dr.AbdulGhafoor Awan,**

Dean, Faculty of Management and Social Sciences,  
Institute of Southern Punjab, Multan-Pakistan.  
[ghafoor70@yahoo.com](mailto:ghafoor70@yahoo.com). Cell # 0313-6015051

**Muhammad Akmal,**

MS Scholar, Department of Business Administration,  
Institute of Southern Punjab, Multan-Pakistan.

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### ABSTRACT

*This study aims to analyze several program of provincial level introduced for improving the quality and standards of education in Punjab, Pakistan. Total population consists of 116 schools which are working under Punjab Education Foundation in Multan District. Out of 116 schools, 99 schools were selected as sample. 33 school heads were interviewed from each tehsil and the sample size is good enough to give better results of the estimates. Keeping in view all the essentials, this study has examined the impacts of PEF on the provision regarding quality education as well as its impacts in increasing or decreasing enrollment rates at primary school level with. The results are significant.*

**Key words:** standard of education, PEF, Enrolment Rate.

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### I. INTRODUCTION

The Government of Pakistan has introduced several education policies and reforms for improving education standards apart from the provincial governments which have also been active in this field. The objective of this study is to analyze different programs launched at provincial level for improving the quality and standards of education in Punjab Province. The foundation of Punjab Education was constituted in 1991 as an autonomous body to provide education through public-private cooperation in the remote areas. This foundation had very strict rules which got to be restructured in the light of Act-XII. The Objective of Punjab Education Foundation are very clear regarding the promotion of high quality education by providing financial and technological support. Punjab has significantly greater participation among the children of school ages in comparison with remaining provinces of Pakistan. At the

time in this, 60 and 35 thousand governments as well as private schools are operating in 36 districts of Punjab (Asadullah; 2009).

### **1.1. Objective of Study**

The objective of this paper is to analyse the role of Punjab Education Foundation in enhancing literacy rate with the launching of Punjab Education Foundation programs FAS, EVS and NSP at primary, middle and secondary levels specifically in the rural areas. Our study will also explore the important determinant of Punjab Education Foundation to enhance literacy rate in Multan District.

## **2.LITERATURE REVIEW**

We briefly explained the relevant studies to our research in the followings: -

Awan (1987) conducted research on the comparative analysis of English and Urdu Medium educational Institutions in Islamabad and concluded that English language is the main impediment in the way of promoting literacy rate in Pakistan.

Awan & Aqsa Riasat (2015) examined the role of female teachers in promotion of literacy rate in the rural and tribal areas of Pakistan. They concluded that growing education among female particularly at higher level are not only reducing the need of female teachers in the rural areas but also significantly contributing in improving literacy rate in far-flung areas.

Awan et,al (2015) argued that lack of education and poor literacy rate are the main two causes of poverty in the rural areas of Pakistan. They have suggested that female education is an imperative need for enhancing literacy rate and reducing poverty level in the rural areas.

Awan and Asma Zia (2015) evaluated the role of private and public educational institutions in enhancing literacy rate in the rural areas. They emphasized that private educational institutions are more effective and more efficient in promoting literacy due to their latest curriculum and effective teaching system.

Lovell (1992) added that for ensuring school functioning, sustainability had got to be a significant requirement besides budget availability which was also a key factor. However, budget was arranged via many sources including government as well as private funding, donor societies' donations as well as the contribution of locals or philanthropists. Participation of the community as the only source could never ascertain persistent sustainability. It is because these communities also relied on external funding in order to run the schools. Thus, the key factor behind engaging the community in role of monitoring or supervising was guaranteeing that these outdoor funds were prudently consumed. Through this, regardless of judicious or self-generation usages, couple of means very efficiently undertook persistent sustainability, in case

of stopping exterior interventions even. Alike, this was how the element of self-reliance got to be achieved.

Heneveld as well as Craig (1996) identified this phenomenon of parent community supports as key factor regarding the determination of better school functioning. In contexts of relevance to the underlined area, they got to highlight five types of categories regarding parent community supports including children who attended schools got to be prepared enough, interaction amongst parents, community as well as school was consistent, community had got significant roles regarding the governance of schools as well as community and parents assisted along several directions. Through specific means, many of the researchers had identified several means regarding community contribution in order to make education process successful.

Reorientation (1997) attempted to investigate the achievements in NWFP with respect to SAP. Results of the study indicated significant progress in flourishing the primary education throughout the country especially in NWFP. In terms of quantity, it managed to bring observable achievement however, there was still much desired in qualitative terms. However, SAP donors were not satisfied or happy with the achieved progress so they gave 'line of action' for improving the usages of funds via shifting the attention to the weakness of current social services from the approach of 'bricks and mortars'.

Rugh and Bossert (1998) engaging six of the countries including Kenya, Columbia, Philippines, Bangladesh, Bolivia as well as Pakistan explored different studies of a same figure of six. In results, it was summed up that only in case of ensuring some powers over teachers as well as the rest of the staff related to education; the underlying community could have made them answerable. However, the underlined powers or authorities might take form of moral or social ties when the salaries of school employees were produced via different community sources apart from when there got to have authorized native group of people for exerting their influences on teachers. Findings of the study also revealed that parents were fully authorized to impose their influences in different affairs at schools especially in monitoring the performances of the teachers when they contributed via endowing their material, labor or lands, funds as well as time.

Khan (1999) explained that initiatives of earlier times related to education primarily concentrated on providing school inputs regarding its structure, however, few inputs were linked for increasing the enrollment factor or students' performances. In 1993, an effort called 'Social action program' consisting of SAP-1 as well as SAP-2 had made greater investments

over schools' infrastructures in time duration of 10 years yet there had no evaluation of the results of these undertaken programs. Moreover, very complex system of monitoring as well as local leaderships' weak engagement caused of the suffering of SAP. There were great opportunities of corruption made due to consistent political change apart from general operation in federal government which aimed to divert program's energies of producing fruitful results. Yet many of programs designed later including operations at local governmental units, preventing corruption, constructing very efficient programs related to monitoring or planning as well as focusing on outcomes got their learning from SAP experiences.

Bedi and Garg (2000) scrutinized that education had got publicly provided in most of the emerging countries. However, the significant government's role was necessarily important as inefficiencies regarding public schools or scarcity in public funding had severely been found. For measuring the effectiveness, they examined Indonesian data for exploring the private vs. public schools' efficiency or earnings related to labor markets. In order to have control over personal characteristics or school choices, they found that private schools' graduates performed relatively better within labor markets. This got right opposite to the popular beliefs prevailing inside Indonesia that public level secondary schools were more superior. In conclusion, findings of the study recommended greater needs to make private contribution very sure in type of education sector.

Selod along Zenou (2002) explored that whites as well as blacks had different salaries or incomes. This was the reason that they took different decision regarding having their residences or about the schools in order to admit their kids. It was revealed that blacks attended kind of private schools' despite of the fact that they were imposed higher tuition fees by the whites or isolated locations for living. Moreover, the best market solutions were also not revealed it was because whites had overpriced the education for confining the attendance of blacks in private schools. Different education strategies were however considered including subsidies related to transportations, vouchers of private schools as well as expending on public level schools. Policies efficiencies greatly depended on whites' behaviors which varied from policy to policy.

Naidoo (2003) explained that very primary obligation regarding the provision of education got linked with local, regional as well as national authorities. Meanwhile, it was also learnt that it would not be right to expect from concerned authorities for meeting the expectations of every person and this could be due to several reasons i.e. insufficient public funding. However, the situation became more confined with regard to the emerging countries where the claim that 'education to all' had confronted serious obstacles. Between NGOs and Government, however,

this reintroduced partnership might attain the desired goals efficiently. Delivery system as well as integrating partnership had played an important role in increasing the demands for education. An additional great benefit of these partnerships was that these lessened loads the ones paying taxes.

Epple et al. (2004) explored that private schools got to have incentives in terms of varying tuitions for attracting eligible students especially when the element of peer effects appeared in education. They developed general model of equilibrium in 1988 which characterized students' choices regarding different schools as well as equilibrium evaluating. However, the model predicted that this sense of competition would compel the private institutions for providing discounts to those students who were capable enough. Moreover, this might prompt to stratification of equilibrium through abilities as well as incomes amongst different sectors of private as well as public.

Fielding et al. (2006) studied several social development indicators i.e. education in order to identify the impacts of foreign aids on it. Findings of the studies revealed that excluding the negative impacts of aids regarding the completion of primary level education, it had created almost positive impacts over all the underlined development indicators.

Thiele et al. (2006) in almost 100 countries from time duration of 1980 to 2005 analyzed the foreign aids in its impacts on education. Furthermore, they investigated that in terms of good policy environments, this aid could be beneficial towards educational outcomes or not. Findings of the study patently revealed that enrolment rates had positively been associated with both expenses over education as well as aids education sector provided with. However, democracy didn't create its positive bond to the school enrolments. They were also of the view that in order to purify both quantity as well as quality of education in type of recipient countries, donors should have produced more resources.

Michaelowa and Weber (2006) analyzed the multiple impacts of educational aids with respect to produce education outcomes. However, the findings also showed that an association did exist between educational outcomes and foreign aids yet of a lowest rank. Moreover, findings of the study also showed that in type of developing countries these expenditures regarding national education didn't create strong impacts over educational productivities. Moreover, it was found that institutional as well as political governance had left great impacts over educational outcomes apart from good governance in terms of economy which showed little effects. However, it was concluded evaluating all the available results that very solid sort of structures

in emerging countries needed to be built regarding basic level education so that the benefits related to foreign aids could be obtained maximally.

Shami (2007) illustrated about the significance of capacity buildings regarding the programs of school administration boards. However, the government decided to engage NGOs in order to accomplish this program because these had got to be very potential as well as vastly organized for mobilizing the whole community. After seeking out for legal requisites, the ministry of education permitted the parents teachers association as well as other committees of school management for getting recorded as citizen community boards. After getting registered, the members had gained legal statuses. And which further made them authorized for sharing fund of district development as well as 20% of the fund of local community.

Lamarche (2008) inspected that recent debates on school selection had appeared as the basic issue that whether academic achievements of the students could really be improved by voucher programs or not. In contexts of United States of America, the author investigated the distribution related to higher achievements gaining within very first school. He got realized that students selected for program of Milwaukee parental choice and with low performance had nearly undeviating losses while the students with high performances had positive or increasing gains. Yet the undertaking program seemed preventing the students along low performances from experiencing bigger loss as done by public school students.

Asadullah (2008) explained the graduates of public as well as private school in Pakistan and Bangladesh with respect to the differences they had amongst their wages. Pakistani graduates who studied in private schools were got to have more earnings than the students belonging to public schools. However, situation was found opposite in Bangladesh. Regarding the debate about private school effectiveness, such findings had great implications in contexts of South Asia. Our result would as reveal private schools superiority in Pakistan as the extent of wages arouse respecting private schools education. However, findings of the study showed that in Pakistan as well as Bangladesh, this difference of both type of schools' performances would always be a mystery. This difference, however, could be verified via regulatory regimes got faced such schools or through explaining difference within country with respect to public policies regarding private schools.

Bettinger and Long (2009) estimated charter schools in its effects regarding both type of students who attended them or public schools at neighboring. He came to observe major changes in students' test scores of public as well as charter schools via undertaking schools

level stratum with the help standardized testing programs of Michigan. He also established that test scores with respect to the students of charter school were not improved or actually declined in comparison with those students who belonged to public schools. The underscored study exploited exogenous variations generated by charter law of Michigan for identifying charter schools' effects or influences on public level schools. However, findings of the study revealed that charter schools didn't create any sound effects regarding the test scores at public schools in neighboring.

Nakasuka et al., (2010) revealed that in Pakistan, levels regarding educational development had got to be very lower. However, in 2000, decentralization reforms were introduced for improving the education delivery of basic levels via designating body of local government along responsibilities of administrating it. In NWFP, regarding administrating the education at local levels, a study based on qualitative fields found that serious problems which could hinder an effective education delivery system i.e. teachers' transfers. On the other hand, for improving educational services delivery or evolving the stakeholders networking, interpersonal relationships familiarity was detected as great potential asset.

Cavalcanti et al. (2010) for quantifying the differences between private and public schools' performances in relation with an exam of entry test in type of public universities in Brazil, consumed set of novel data. Although in Brazil, there got to have several public level universities yet no study was found consuming data based on the entry test scores for evaluating performances of the students or to identify the hurdles for publics to get in to good public universities. However, the underlying data set carried complete information regarding the individuals, school features as well as the backgrounds of the families. It was found that students of public schools were got average in their test scores i.e. 17% lesser than the students who were from private schools. The results got to be detected were vigorous gave answers regarding omitted variables, attrition, or unobservable discrimination. It was found that the students from public level schools got to face higher difficulties at times of getting into universities. Quantitative evidences were also revealed at the end of the study which showed that system of elitist higher education in Brazil was a major reason behind the persistent discrimination.

Glewwe et al. (2011), however, indicated that it was very hard to identify the specific characteristics either of teacher or school in order to expand the educational productivities. A number of scientific studies were reviewed across many of countries directed from time duration of 1999 to 2010 which revealed that a very few of teacher as well as school features

left substantial impacts with respect to dropouts or learning. As these include knowledge of the teachers regarding their subjects, lower teacher absence as well as desks accessibility.

Juma *et al.* (2012) explicated that kids' education had seriously been affected by the socio economic status. For instance, it was observed that the students' academic performance might greatly influence if their parents were educated and belong to a family carrying handsome amount of income as well as managing the environment of the homes favorably. Interviews as well as questionnaires were used as data tools of data collection. The research questions related to the parents' effects over family as well as income and size of the family affecting students' educational performances were asked. Through using frequency counts, percentages as well means, quantitative data had been analyzed. For judging students' academic achievements as well as socioeconomic status, method of chi-square was also used. In results, the undertaken study concluded that the social status as well as the academic performances of the kids especially girls is also affected by their parents' education. Almost at all levels, parents' economic status was the prominent factor which affected learning of the students. It was also recommended that in order to support better performance of the girls, government should have felt parents' needs as the principals of the schools should encourage the parents for using their resources so that they could ease their kids in much better ways. Moreover, it was proposed that for spreading the quality education, government should have endowed fee reimbursements.

Chudgar as well as Quin (2012) highlighted the Indian educated system in perspectives of the importance of private schools. Through regression analysis, results for both urban as well as rural area students indicated that the students of private schools performed relatively better. After piloting the multivariate analyses, benefits of private schools got statistically insignificant in both of the contexts. Moreover, through regression frameworks they made an initial level attempt either for identifying private schools with low-free boundaries. It was resulted that in such type of schools' children couldn't perform better more than public schools. Different methods or data were also not free of limitations. However, the undertaking analysis got to raise many questions in Indian contexts claiming that the effects of private schools might be positive apart from highlighting potential heterogeneities regarding the performance of private schools.

Oliveira and Rumble (2013) via counterfactual decompositions presented private-public gaps related to test scores 8<sup>th</sup> graders attained within Brazil. Methods of quintile regression were engaged for obtaining characterization related to scores' conditional distributions which were further used in order to develop counterfactuals. The obtained findings recommended the

students attending public level schools along relatively low performances might perform poorer than before while returning towards characteristics from the students of private schools. The analysis also highlighted family backgrounds' significances with regard to the scholar achievements of the students.

### 3. RESEARCH METHODOLOGY

This study is to measure Impact of Punjab Education Foundation on literacy in Multan District and secondary level schools were chosen to address this research question. This research is mainly depending on primary sources of data.

#### 3.1 Data Sources

The data for dependent and independent variables at secondary school level is drawn from field survey of three tehsils of Multan district called Jalalpur Peer Wala, Shujabad and Multan. Sample of the population is selected from the rural and the urban areas of all three tehsils. We have interviewed about the 99 school heads at secondary school level working under Punjab Education Foundation.

#### 3.2 Population and Sample Size

Total population consist of 116 schools which are working under Punjab Education Foundation in Multan District. Out of 116 schools, 99 schools were selected for the sake of analysis. 33 school heads were interviewed from each tehsil and the sample size is good enough to give better results of the estimates.

#### 3.3 Estimation Technique

In order to collect the data a survey was conducted. All appropriate techniques were adopted for any discrepancy in the estimate. We have used Ordinary Least Square method as an estimation tool.

#### 3.4. Specification of Model

We developed an econometric model for this study which is given below: -

$$Lit = f (NEE, PTR, PRE, DROR, YED)$$

The following equation may be derived from the above function:

$$Lit = \beta_0 + \beta_1 NEE + \beta_2 PTR + \beta_3 PRE + \beta_4 DROR + \beta_5 YED + u_i$$

Where:

$\beta_0$  = Intercept

$\beta_1 \dots n$  = represents slopes of respective explanatory variables.

Lit = literacy rate or enrollment rate in school working under PEF and in private schools

NEE= Educational expenditures in school working under PEF and in private schools

PTR = pupil-teacher ratio in schools working under PEF and in private schools

PRE = Presence of the student in school working under PEF and in private schools

QOE= Education level of teaching staff in school working under PEF and in private schools

DROR = Total no of drop out in school working under PEF and in private schools.

ui= represents error term

#### 4. DATA ANALYSIS

The results of elementary analysis of data based on various indicators are briefly explained as; new enrolment in schools is reported in table 1 and it is clear from the table that the enrolment rate in 13 schools is in first band. Majority of schools, almost 39 schools exist in second band. Only 8 school reported enrollment rate of new students in third band. In fourth band 11 schools exist which have enrolment rate from 61 to 80 students. The schools which have enrolment rate from 80 to 100 students is quite respectable and it is reported that 28 schools exist in that range.

**Table 1: New Enrolment of Students (%)**

New Enrolment	Number of Schools	(%) of total sample
00-20	13	13.13
21-40	39	39.39
41-60	8	8.08
61-80	11	11.11
81-100	28	28.28

Source: field survey conducted by the author

The expenditure on the education is a major factor that effect the enrolment rates. The students whose parents are rich have no problem to get enrolled in schools while poor families prefer to send their children for work instead of schools. 26 schools reported that their students can manage their education from Rs.200 to Rs.1000 monthly expenditures. However, 19 schools reported that their student monthly expenditure range in Rs.1001 to Rs.2000. Similarly, the number of schools on the basis of monthly student expenditures are reported in table 2.

**Table 2: Average Monthly Expenditure of Students on Education**

<b>Average Monthly Expenditure of Household on Education</b>	<b>Number of Schools</b>	<b>(%) of total sample</b>
200-1000	26	26.26
1001-2000	19	19.19
2001-3000	15	15.15
3001-4000	14	14.14
4001-5000	16	16.16
5001-10000	9	9.09

Source: field survey conducted by the author

The attendance rate is reported in three different bands. These bands are particularly ranged on the basis of collected data. Table 3 show that only two schools have attendance rate below 50 percent while 17 schools reported that their average yearly attendance rate is from 50 to 75 percent and 80 schools mentioned that their annual average attendance rate is over 75 percent.

**Table 3: Average Attendance rate of Students**

<b>Profession</b>	<b>Number of Schools</b>	<b>(%) of total sample</b>
26% to 50%	02	2.02
51% to 75%	17	17.17
76% to 100%	80	80.80

Source: field survey conducted by the author

The education level of teaching staff in schools is reported in table 4. It can be observed that there are 7 schools which have hired the matric level staff for teaching and 40 schools have intermediate level teaching staff. It is also reported that 48 schools have graduate teachers while in 4 schools teaching staff have master degree.

**Table 4: Education Level of Teachers in the Schools**

<b>Education Level</b>	<b>Number of Schools</b>	<b>Household (%)</b>
Metric	07	7.07
Intermediate	40	40.40
Graduation	48	48.48
Masters and above	04	04.04

Source: field survey conducted by the author

Dropout rate of students in a year is reported in table 5.8. The results show that 68 schools have dropout rate from 1 to 5 students in a year. It also shows that 22 schools head reported that the

annual dropout rate in their school is lies between 6 to 10 students. However only 9 schools show that the annual dropout rate is from 11 to 15 students. So it can be observed from table 5.5 that majority of schools working under Punjab Education Foundation have dropout rate less than 5 students per year.

**Table 5 Number of drop out students in a year**

Education of Mother	Number of Schools	% of total sample
1 to 5	68	68.68
6 to 10	22	22.22
11 to 15	9	9.09

Source: field survey conducted by the author

Summary statistic of the dependent and independent variables are given in table 6

**Table 6: Summary Statistics**

Variables' Name	Lit	NEE	PTR	PRE	QOE	DROR
<b>Mean</b>	81.649	1861.328	19.83	78.94	12.93	8.84
<b>Maximum</b>	147	11735	34.61	98	16	27
<b>Minimum</b>	13	782	14.92	46	10	2
<b>Std. Dev.</b>	1.04	0.92	0.75	0.81	0.63	0.95
<b>Skewness</b>	-0.84	-0.54	-0.14	-0.43	-0.47	-0.42
<b>Kurtosis</b>	3.46	2.96	2.16	2.51	2.50	2.46
<b>Jarque-Bera</b>	18.43	667.00	41.66	25.99	16.84	31.03
<b>Prob.</b>	0.00	0.00	0.01	0.04	0.03	0.04
<b>Obs.</b>	99	99	99	99	99	99

Source: Authors own Calculations and based on survey data

Table 6 reports the descriptive statistics of the selected variables. The average values of Literacy rate (Lit) and Education expenditures (NEE) are 81.649 and 1861.32 respectively. The average value of independent variables Pupil teacher ratio (PTR) is lies at 19.83 and for Attendance rate of students (PRE) is at 78.94. Table 5.4 also shows that the average values for Education Level of Teaching Staff (QOE) and total yearly dropout rate (DROR)are 12.93, 8.84 respectively.

If we consider the skewness of the variables, almost all the dependent and independent variables are little bit skewed. Results show that the dependent and independent variables are negatively skewed in the observed sample. As far, kurtosis is concerned, it is used to measures

the peskiness or flatness of the data with relevance to normal distribution. The value of kurtosis indicates that the variables like Advertisement (Lit), has high peak or has Leptokurtic distribution. Variables like Education Expenditures (NEE) has approximately normal distribution while the shape of distributions for Pupil teacher ratio (PTR), Attendance rate of students (PRE), Education Level of Teaching Staff (QOE) and Total yearly dropout rate (DROR) are relatively low peaked or Platy- Kurtosis

The Jarque-Bera (JB) test of normality provides joint hypothesis of skewness and kurtosis. Jarque–Bera (JB) test of normality suggests that if the computed ‘p’ value for the concerned variable is zero or less than 5 percent critical value, as the ‘p’ value are very low, therefore it is stated that the residuals for dependent and independent variables are normally distributed.

**Table 7: Correlation Matrix**

	<b>Lit</b>	<b>NEE</b>	<b>PTR</b>	<b>PRE</b>	<b>QOE</b>	<b>DROR</b>
<b>Lit</b>	1.00					
<b>NEE</b>	0.28	1.00				
<b>PTR</b>	0.25	0.48	1.00			
<b>PRE</b>	0.15	0.57	0.42	1.00		
<b>QOE</b>	0.11	0.49	0.51	0.29	1.00	
<b>DROR</b>	0.29	0.38	0.69	0.29	0.46	1.00

Source: Authors own Calculations based on survey data

Table 7 indicates the results of correlation matrix which represents the degree of association among the pairs of variables. The outcomes of the present study indicate that the highest degree of association exists between Total yearly dropout rates (DROR) and Pupil teacher ratio (PTR) which is reported at 0.69 points while the lowest degree of association is observed between the variables Education Level of Teaching Staff (QOE) and Literacy rate or enrolment rate (Lit) which lies at point 0.11. This pair-wise coefficient of correlation is also useful to identify the problem of Multicollinearity in the observed model. The coefficient of correlation higher than 0.8 shows sever Multicollinearity and lead towards an estimation bias, however in our observed model the pairwise coefficient of correlations is much lower than 0.8 and indicates no Multicollinearity issue.

## 5.ECONOMETRIC ANALYSIS

The results of estimated model by applying Ordinary Least Square method are given below:

**Table 8: Regression Results**

**Dependent Variable:** Literacy Rate or Enrolment Rate (Lit)

**Method:** Ordinary Least Squares

**No. of Observation:** Included observations: 99

Variable	Coefficient	Std. Error	t-Statistic	Prob.
NEE	-0.111*	0.068	1.636	0.104
PTR	-0.139***	0.062	2.241	0.026
PRE	0.102*	0.062	1.652	0.100
QOE	0.294***	0.060	4.851	0.000
DROR	-0.073	0.067	1.084	0.280
C	1.404***	0.291	4.822	0.000
R-squared	0.584	Akaike info criterion		1.629
Adjusted R-squared	0.551	Schwarz criterion		1.851
S.E. of regression	0.527	Hannan-Quinn criter.		1.719
Sum squared resid	38.385	Durbin-Watson stat		1.831
Log likelihood	-110.380	F-statistic		28.423

Source: Calculations by using E-Views 5 and based on survey data

Note: \*represents 10 percent level of significance, \*\* represents 5 percent level of significance and \*\*\*represents 1 percent level of significance

Table 8 shows that the results obtained by using ordinary least square method. We have also observed that the value of regression coefficient of Education Expenditures (NEE) is -0.111, it means that the one-unit increase in (NEE) will cause Education Expenditures 0.111 points decrease in i.e. Lit and results also show that this negative association is statistically significant at 10 percent level of significance. There exist negative and statistically significant association between Pupil teacher ratio (PTR) and dependent variable (Lit). The coefficient of Pupil teacher ratio (PTR) has a negative impact on dependent variable (Lit). It can observe from table 5.6 that a unit increase in Pupil teacher ratio PTR will reduce Literacy rate (Lit) about 0.139 units. More importantly the association between Pupil teacher ratio PTR and Literacy rate is statistically significant at 1 percent level of significance.

Regression analysis shows that Attendance rate of students PRE has positive association with literacy rate (Lit) and it is statistically significant at 10 percent level of significance. In other

words, a unit increase in Attendance rate of students PRE will boost literacy rate about 0.102 units. Education Level of Teaching Staff (QOE) also has positive impact on dependent variable i.e. Literacy rate (Lit). The results show that a unit increase in Education Level of Teaching Staff (QOE) will improve literacy rate (Lit) about 0.294 units. It can be observed that the positive association between Education Level of Teaching Staff (QOE) and literacy rate (Lit) is statistically significant at 1 percent level of significance. Finally, the results show that the yearly dropout rate DROR has negative impact on Literacy rate. It can be observed that a unit increase in yearly dropout rate DROR will reduce literacy rate about 0.073 units. Although there exists negative relationship between yearly dropout rate DROR and literacy rate (Lit) but the value t-statistics is less than critical value therefore this association is statistically insignificant. The goodness of fit is also tested and reported by  $R^2$  and for our model its value is quite respectable and reported around 0.584. While R-squared provides an estimate of the strength of the relationship between our dependent and independent variables, however it does not provide a formal hypothesis testing. Therefore we reported F-statistics which is 28.43 with zero 'p' value, which shows the group of explanatory variables has statistically significant relationship with dependent variables. Further we will test the stability of our estimated model in next section.

### 5.1. Stability Test

In order to check the stability of the coefficients we plot the cumulative sum of recursive residuals CUSUM and cumulative sum of recursive residuals of square CUSUMS. Figure 5.1 represent the results of CUSUM and figure 1 shows the result of CUSUM square, and the results show that coefficient in our estimated model is stable as the graph of CUSUM and CUSUMS statistics lies in the critical upper and lower bounds. The absence of divergence in CUSUM and CUSUMS graphs confirms that our model estimates are stable.

Figure 1 Cumulative Sum Control Chart

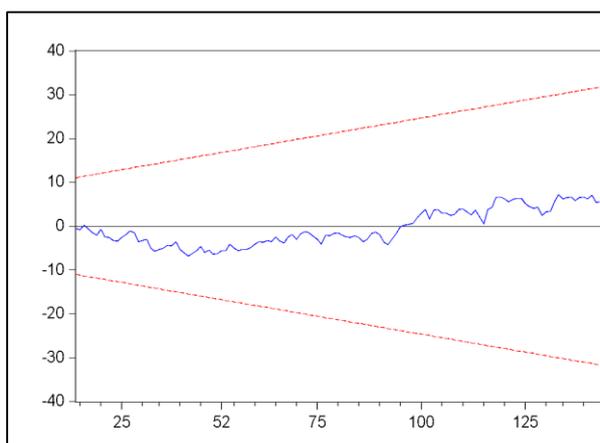
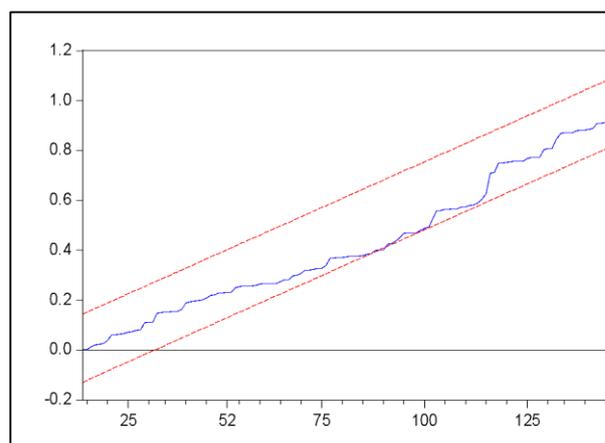


Figure 2 Cumulative Sum of Square Control Chart



## 6. FINDINGS AND RESULTS

Our empirical results show that the rise in Education Expenditures (NEE)  $-0.111$ , will decrease the capabilities of families to send their children in schools and results shows that  $0.111$  points decrease in Literacy rate may be observed by one-unit increase in education expenditures. Pupil teacher ratio (PTR) means less teaching staff and large number of students also discourage the parents to enroll their children in that school. While the relationship of dropout rate DROR has straight forward negative impact on Literacy rate. It may lower the literacy rate because mostly the children left school, when they showed no interest in education or their parents running out of cash to finance their education. But in our case the reported results are insignificant there could be different possibilities likewise there may be very low dropout rate in the observed sample. Our findings also show that high attendance rate has positive impact on literacy rate and education level of teaching staff is also supportive to increase the literacy rate. Here we can conclude that the high attendance rate and education level of teaching staff are important factor to increase the enrolment rate in schools and ultimately the higher enrolment rate will increase the literacy rate.

## 7. CONCLUSIONS

As present study uses quantitative depended variables, therefore Ordinary Least Square method is applied to find out the impact if explanatory variables on dependent variables i.e. total enrolment of students at secondary schools' level. Further from empirical findings, it can be concluded that the rise in education expenditures will decrease the capabilities of families to send their children in schools. Pupil teacher ratio reporting less teaching staff and large number of students which is discouraging the parents to enroll their children in that school. While the relationship of dropout rate has straight forward negative impact on literacy rate. It may lower the literacy rate because mostly the children left school, when they showed no interest in education or their parents running out of cash to finance their education. But in our case the reported results are insignificant, so there could be different possibilities likewise there may be very low dropout rate in the observed sample. Our findings also show that high attendance rate has positive impact on literacy rate and education level of teaching staff is also supportive to increase the literacy rate. Here we can conclude that the high attendance rate and education level of teaching staff are important factor to increase the enrolment rate in schools and ultimately the higher enrolment rate will increase the literacy rate. In addition, our findings show that the Punjab Education Foundation playing positive role to increase the literacy rate specially in Multan District. The school working under Punjab Education Foundation exert less financial pressure on parents and ensure the quality of teaching staff and learning of students

by applying different constraints. Foundation also playing role to decrease the student teacher ratio which has positive impact on quality of education and dropout rate is also very minimal in schools which are working under PEF. Therefore, this study conclude that the role PEF is helpful to enhance the literacy rate in District Multan.

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