EXAMINING THE RELATIONSHIP BETWEEN LITERACY RATE AND POVERTY IN PAKISTAN

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ABSTRACT
Education plays an important role to pave way towards economic growth. Investment in education enhances the living standards and it is necessary for economic growth and social well-being of a society. This study forecasted the education status and its impact on economic growth by taking data from1971 to 2016 in Pakistan. Secondary data were taken from International Finance Statistics and World Bank Development Indicators. The variables included in the research were poverty, Education status, and Economic growth. Time series analysis was carried out on the data. The methodology includes the use of Augmented Dickey Fuller test, WALD test, Johansoncointegration test, and VECM test. The study found long-run relationship between economic growth and the education status when poverty serves as dependent variable measuring economic growth in Pakistan. This showed that education affects economic growth in longer run but not in short run. The interdependency between the variables suggested that policies should be formulated that would have a long lasting positive impact on education status of population and continuity of the policies to achieve its objectives is more essential.

Key Words: Literacy Rate, Poverty, Economic Growth, Education Status.

1.1 INTRODUCTION
Education is a fundamental right of human beings and provides the base on which distinct and communal cultural identity can develop. Education is vital for sustainable human development. It also enables people to live unruffled in harmony. Every individual has the right to school education and every adult has the right to fulfill his or her elementary learning necessities. Every religion has laid stress on the importance of education and learning. Increasing literacy rate is the main area of concern and need of the present time. The definitions of literacy may vary from country to country. According to the most acceptable definition presented by UNESCO, adult literacy is defined as;

"Literacyrate is the percentage of people ages, 15-24 who can, with understanding, read and write a short, simple statement in their everyday life."
Education affects the growth in society both directly and indirectly. The direct effects include imparting of knowledge, skills and training that is linked to higher wages. The indirect or

external effects include accomplishment of basic needs, higher levels of autonomous participation, greater utilization of health facilities, shelter, water and other basic necessities that help to achieve fertility, family abundance and health. The nexus between education and poverty can be examined by analyzing rates of returns by education and production function analysis at all levels. Improving comprehensive educational provision, attainable to poor women, involves reprioritizing expenditure patterns in the sector, with added allocations to basic education as well as non-formal, adult education set-ups and pre-school education. Spending at college levels should be appropriate for promising greater enrolment for female students. Attainable amount reviews should cover an analysis of educational spending from a gender point of view and outcomes can be observed by using gender-disaggregated benefit incidence analysis(Jeffery, 1996).

Many researchers have highlighted the effect of education as accelerating economic growth. Poverty rate goes down with the increase in literacy rate. Poverty is more concentrated in illiterate households in developing nations. For example, in Pakistan, nearly all the poor are uneducated and unskilled. Previous literature suggested that illiterate and unskilled population remains poor and on the other hand, the educated nations can never be poor. The indirect relationship between poverty and education was found in middle school graduates and illiterate individuals (Graham, 2002). Similarly, Tether (2005) found an inverse association between education and poverty in case of India. Lower literacy rate hinders progress in developing countries. The illiterate and unqualified population tends to migrate to other countries in search of better opportunities. This can be summarized by understanding that poverty is absent in educated households and its presence is noted in illiterate households(Tether, 2005).

The role of education in empowering the poor has been over looked over the past few years and this is apparent from the literacy rate of the region. Because education is considered unimportant for poor as they have major survival issues. The upper class notion that accessibility of education to poor would be against the benefits and well-being of the well-to-do, influential and rich people, also leads to deprivation of education to the poor. Furthermore, many researchers concluded that elite are against the idea of educating the poor as they get empowerment and awareness of their rights. Moreover, an inverse relationship between child mortality rate and female literacy rate which is a major poverty indicator has been observed. It is evident from many studies that child development and female literacy rate are significantly associated to each other(Khan, 2009).

The global education is a major factor in decreasing gender biasness in education and thus, eradicating poverty and giving more socio-economic benefits. Strong gender discrimination in education is evident in South Asia. The female average school life expectancy is 8 years whereas the male school life expectancy is 10 years. The social benefits of female education are far more than those of male education and this is clear from many past researches. Child mortality rate can be reduced up to 15% just by increasing a single year of education of mothers. This shows that female education can change the status of any nation and put it on the road to success(Katarina, 2005).

There are three major effects of poverty on education status. First effect is from the financial side, second is the social stress faced by the poor students, and last is the deterioration of educational standards due to poverty. Broadly speaking, usually poor countries have lower literacy rates and at individual level also, the poor children have lesser access to quality education. Out of more than 6.5 million children, about 80% of them have never been to school

in Pakistan. Economic and non-economic constraints of these high figures include child labor and gender discrimination in education. Incomplete knowledge of religion is also a major barrier to education particularly among females. Unfortunately, Pakistan has the second highest number in the list of out-of-school children, where more than 60% population lies below national poverty line. It is evident that income and education poverty have strong bidirectional relationship at individual and national level (Special, 2008).

2.1 LITERATURE REVIEW

Farooq (2015) highlighted a few major components of health and education for reducing unemployment in long term and short term period of life. The researcher included cointegration tests on time series data from the time period 1972-2010 in Pakistan. He applied VAR and VECM techniques on the data. The results showed that educational spending, total number of enrollment in school, healthcare spending, gross fixed capital development, and total number of hospitals were the major components in reducing unemployment in case of Pakistan. The findings confirmed that by including 7% yearly changes in short run measures, long term equilibrium could be achieved. More spending on education was recommended at primary levels and vocational training programs by giving loans and grants to students. Similarly, increased health spending would have a substantial and positive effect on overall health of the country's population (Farooq, 2015).

Sattar (2012) undertook sociological observations of scattered variables; for example, cost of learning, squat enrolment rate, urban rural disparities, adult literacy, lack of concerns of parents, and huge drop out ratio in the sector of educational structure. The researcher analyzed the schools associated with Board of Intermediate and Secondary Education (BISE) of Multan, a district in Punjab, Pakistan. Both secondary and primary data was taken from Human Development Centre (HDC), Economic survey of Pakistan, and by interviews respectively. The researcher concluded that decentralized management, assessment system, and expensive education are a major element that affects the basis of education sector in the country. She recommended sufficient organizational facilities, strong strategies, equity and consistency in educational sector, strong and plentiful involvement of stakeholders to decrease damaging effects of the variables (Sattar, 2012).

However, Mursa (2007) explored the positive association between education and employment. The results showed the main reasons of unemployment were; lack of abilities, education, skills, and awareness. The researcher stated that economic growth was directly related to education because it enhanced productivity. It was concluded that less educated work force were not preferred by employers because of lack of knowledge and skills. The author further concluded that more qualified employees had cooperative benefits over less educated ones and they were being offered high salaries and compensation packages by the employers. Moreover, many organizations preferred high qualified people as they were more knowledgeable and higher qualification increased the probability of employment (Mursa, 2007).

Abbas (2008) identified the effect of education level on income in Pakistan. The researcher took cross sectional data of Pakistan for the years of 1998-2004. Under-education was considered as a temporary phenomenon. The results concluded a correlation between work experience and level of education which stated that more qualified people had little experience. It was further concluded that male workers had higher salaries when measured with the help of mean and mode

index as compared to the female workers that means more qualified male workers had comparative advantage over the others in the job market of Pakistan (Abbas, 2008).

Okubal (2005) examined the role of spending of government on education on economic development and human capital. The researcher took secondary data from Uganda and applied econometric techniques like Error Correction Method (ECM), Cointegration and time series modeling. Human resource was measured by average years of education. The results concluded a direct and significant association among the variables in long as well as short run. The author recommended that increased government spending on education sector would enhance the educational quality because evidence of research showed that both government spending on education and educational quality were positively related. It was recommended that private sector must bestimulated to capitalize in the educational sector to contribute in the pace of economic development (Okubal, 2005).

Adefabi (2005) inspected the interrelation between economic development and education in long run by employing econometric modeling. The author used secondary data over the years 1970-2003 from Nigeria. Methodology involved the application of Vector Error Correction Method (VECM) and Johansen cointegration test. The results showed that economic evolution could be affected by human capital in two ways in case of Nigeria. Firstly, it could have direct effect on productivity and secondly, it was found sensitive to technological parameters. The results of Johansen cointegration test confirmed a significant relationship in the longer run between the variables under consideration. The researcher recommended that a skilled and well informed labor force had more contribution on the productivity function which consequently had anaffirmativeimpact on the total output level of the economy (Adefabi, 2005)

Kazmi (2005) argued that advantages of globalization could be accomplished by expertise and learning. Better standard of education and learning improves social and economic area of society and also gives the citizens access to information and productivity. Advancement of basic education should be the most crucial element for the advancement of educational programs in developing countries. Both mental and physical health played the most important role in human uplift. It was suggested that investment should be encouraged by the public sector in higher educational sector but at the same time, proper monitoring should be followed to approve national program (Kazmi, 2005).

Psacharopoulos (2004) studied the yield on educational spending. The researchers discussed that there many forms and estimates of return to educational spending in previous period. They checked educational return on nearly 98 countries. It was found that societal rate of return on education is less than private rate of return. Investment of human capital and physical capital were found to be similar to investment on education. Time series econometric models and estimation techniques supported human capital theory. The authors said that mostly benefits of school education are good measure of growth and enhancement of intellectual capacity. They discussed modern forms and assessments of investment in educational sector and concluded that return on education motivated individuals to invest in their human capital. It was suggested that policy makers should pay attention in making the strategies to encourage spending on education from middle income group. They further suggested that return on educational investment on micro level is comparable while this is not possible at macro level. The researchers recommended that further investigation is required on social rate of return to education that would stimulate reform financing instrument and more research is needed on the effect of

education on income by including quasi experimental model in developing countries (Psacharopoulos, 2004).

3.1 PROBLEM STATEMENT

With reference to the previous studies, it can be said that education has an impact on economic growth. To analyze this statement, the literacy rate of Pakistan is forecasted. Education stimulates the economic growth by reducing poverty, increasing employment opportunities, and improving standard of living.Education is an important measure to enhance economic growth. Education attainment faced gender discrimination and was being neglected in the past. Education helps to address many issues like poverty, illiteracy, low economic status and is a road to development. It is the basis of economic prosperity, social wealth, and political solidity.

The present study aidsPakistan to make progress in education sector and facilitates in making better plans in this context. The study helps policy makers of these nations on how to accelerate Economic growth and its implication on common man by analyzing the relationship between growth and adult literacy rate. In lieu of cross-county regressions, this study will apply a time-series analysis to examine the involvement of education growth to economic development on time-series data of Pakistan.

3.2 Objectives of Study

The research objectives were;

- To study the short run relationship between Poverty and Literacy rate.
- To study the long run relationship between Poverty and Literacy rate.

Hypothesis

1. H_1: Poverty and Literacy ratehave short run relationship.
2. H_2: Poverty and Literacy rate have long run relationship.

The present study was designed to investigate the association between economic evolution and education status. The data consists of two major variables including education status as Adult literacy rate more than 15 years of age and population below national poverty line measuring the economic growth (all measured in percentage) of Pakistan. Secondary data were taken for the time-period of forty two years i.e. 1971 – 2012. Data has been derived from "The World Bank Indicators", "UNESCO institute of statistics UIS" and "IMF" economics data sources websites. The software used for data analysis is Eviews and SPSS. At first, data was checked for stationarity and later, on Johansen cointegration test, VECM and WALD Test wereapplied and explanations of results were done. Lastly, results were analyzed shadowed by a brief comparative analysis in Pakistani context.

3.3 Theoretical Framework

Education in its widest term is the source through which, the targets and traditions of a cluster of people's lives transmits from one age group to the following generation.Usually, it happens through some acquaintance that has a determinative aftereffect on the manner one ponders, senses, or acts. In short, education is the academic action by which association advisedly transfers its collected information, skills, and ethics from one group to the next, e.g., apprenticeship in institutes. This theoretical framework helps to understand the impact of poverty theories on the education status(Oxaal, 1997).

Most of the previous researches including poverty and literacy rate have checked whether education brings monetary benefits or not. Most of the experts agree that level of education has positive relationship with the level of economic growth. But there is ambiguity about the direction of causality due to the fact that whether education reduces poverty and enhances economic development or the later give rise to education, is still a fact to be known.

3.4 Education in Economic Theory

After the Second World War, economic development emerged as a separate discipline of economics. Initial theories were the continuation of classical economic theory, which postulated that development takes place due tothe industrialization and growth. But the modern concept of economic development considers education as an important contributor in development and it has been believed that continuous and long-term investment in the human capital exerts positive impact on social and economic development directly by improving the current knowledge and by creating new knowledge and skills and indirectly by reducing the financial allocations for judiciary, health, social protection, etc(Osmankovic, 2011).

3.4.1 Theoretical Framework of Interdependence: Education vs. Development

In second-half of the 20th century, the focus of economic theories changed from accumulation of physical capital to need for investment in human resources. This highlighted the importance of education and different forms of training (additional training, etc.) as a prerequisite for growth. The significance of education for economic development has been highlighted in concepts of human capital, human development, and approach to returns on investment.

3.4.2 Human Capital Theory

The concept of human capital was initially introduced around 1691 by Sir William Petty. Later, it was discussed by *Adam Smith (1776), Jean Baptiste Say (1821), Irving Fisher (1897), John Stuart Mill (1909), William Roscher (1878) and Henry Sidgwick (1901).* Various researchers documented this notion but shied away to treat people similarly as the physical merchandises which has been termed as "sentimentalism."

Adam Smith (1776) defined "the learned and valuablecapabilities of all the citizens or fellows of the society," as "human capital," considering it as one of the four types of fixed capital that lead to production in a national economy.

Human capital is a term that shows the stocks of skills, knowledge, and other characteristics that can be utilized to increase the productivity. Putting differently, human capital shows the efficiency of the unit involved in working hours. Given the impact of competences, education, skills and productivity, it can be assumed that individuals will invest in education in the same way as companies invest in their own physical capital.

Schultz (1993) and Danison (1962) have studied education in the context of Solow's residuals and described that education has direct impact on the evolution of national capital through increased skills, awareness and globalcapability of the workforce. According to Schultz (1993), human capital is a good whose value depends on five categories of investment in people i.e., Health, including nutrition, migration, on-job training, formal education, and study schemes for adults. Schultz argues that people are national wealth and investment in the human capital is the basic reason behind differences in national income (Schuartz, 2010).

Human Capital Theory (associated with Gary Becker's and Mark Blaug's research) stressed that education creates skills that help to enhance productivity. Education is expensive, but it provides

support allowances that can be compared to the costs of each investment project. The proxy affirmation of different kinds is used by human capital theorists for the above discussion. First, the positive association between the salaries that workers receive and the levels of education that they receive is strong and empirically confirmable. It follows that those with higher education have higher productivity levels using the normal suppositions of equivalent labor and commodity markets. Managers use educational characteristics as an aid to their employees ' appropriateness and productivity (Popoola, 2007).

The theory of human capital links education and poverty by agreeing that education and training can reduce poverty, both financially and otherwise. The Millennium Development Goals (MDGs) include both poverty reduction and the achievement of education for all. Intuitive, theoretical and empirical reasons exist that lead to certain synergies, partly rooted in the neoclassical theory of human capital (Schultz, 1961; Becker, 1964). A pattern that can be found in every context is the greater prevalence of poverty among the least educating but the relations between education and poverty are nonetheless difficult and dependent. The household welfare levels are a key determinant of school enrolment, completion, and achievement in children in developing countries. In addition, the level of household welfare is closely linked to the household members ' human capital assets, especially their educational achievements. Figure summarizes some of the key linkages between education and economic welfare. In the spread of both privileges and poverty between generations, the connections between household human capital stocks, household levels of welfare and household investments in human capital (in the form of the decision to enroll the children on school). Therefore it is essential for educational politicians to understand these empirical issues, and is central to CREATE's research agenda (the Consortium for Research on Educational Access Transitions and Equity)(Colclough, 1982).

Figure1: Examples of linkages between education and economic welfare
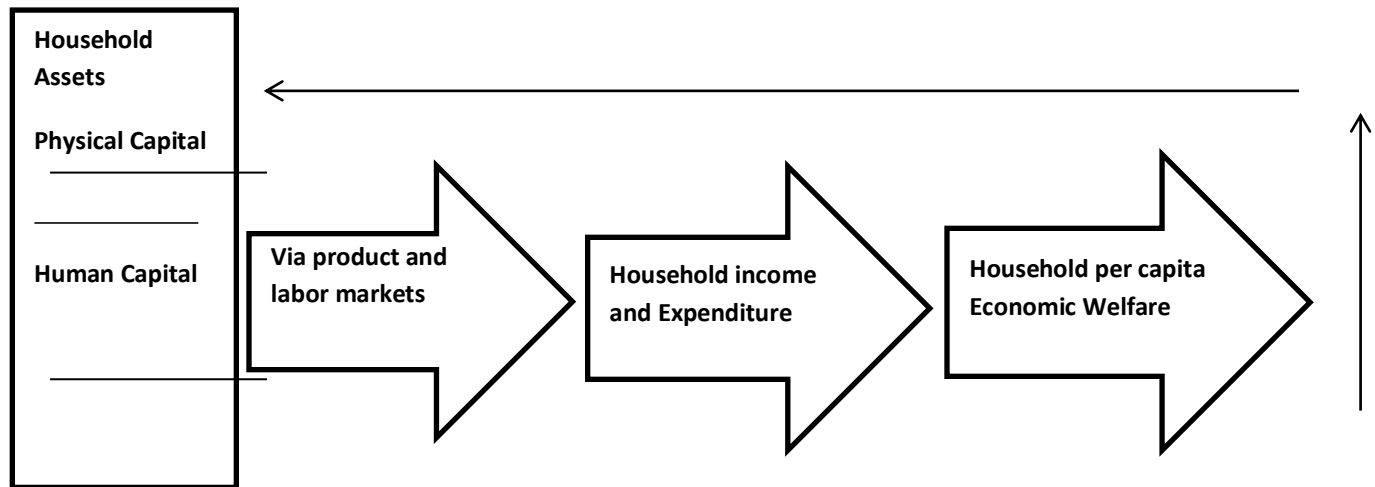
3.5 Sources of Data

Secondary data were collected from World Bank and UNESCO institute of statistics. Poverty rate was used as an indicator to show economic growth whichis served as dependent variable while adult literacy rate measuring theeducation status was taken as independent variable.

3.6 Target Population

Target population of the study includes Pakistan. This country is chosen because Pakistan has a number of social and economic issues such as those concerning education and poverty, and it is an important SAARC country with distinguishing features that are very important and prominent. SAARC is the world's biggest geo-economic bloc. It has 1.2 billion inhabitants. The average combined growth in GDP is over 7 %. Its middle class consumer base is more than 425 million. It makes a tremendous contribution to the ever-changing world economy. It has one of the world's oldest living cultures.

4.1 RESEARCH METHODOLOGY

This section includes the entire procedure and methods through which the research objectives were achieved. SPSS and Eviews software were used for the analysis of econometrics results. The time series econometric procedure was conducted in the following order.

4.1.1 Stationary and Non Stationary Series

Firstly, test of stationarity of the series or their order of integration was carried out. A stationary time series, whose statistical features are constant over time, including average, variation, autocorrelation, etc. The assumption that time series can be approximately stationary (i.e. "stationary") by means of mathematical transformations such as the use of the Dicky-Fuller root test is the basis of the most statistical forecasting techniques.

4.1.2 Unit Root Test

Unit root test was carried out to investigate any probable stationarity in a given time series with the help of autoregressive model.

Unit root process is given by:

$$Y_t = \rho Y_{t-i} + \varepsilon_t \qquad -1 \leq \rho \leq +1$$

Where ε_t shows white noise error term. If $\rho = 1$, then above equation can be written as:

$$Y_t = Y_{t-1} + \varepsilon_t$$

It shows random walk model without drift that is component of non-stationary stochastic process. Hence if the forecasted value of ρ is equal to one then Y_t becomes non stationary. This is common concept of unit root test of stationarity(Dickey & Fuller, 1979).

4.1.3 Dickey Fuller Test

This test is used to determine if the autoregressive unit root of certain type of time series data. In many research studies, this test is widely used to test the stationary of any process. Consider the following three different kinds of random walk process:

$\Delta Y_t = \delta Y_{t-1} + \varepsilon_t$ Y_t represents random-Walk.

$\Delta Y_t = \beta_0 + \delta Y_{t-1} + \varepsilon_t$ Y_t represents random-Walk with drift.

$\Delta Y_t = \beta_0 + \beta_1 t + \delta Y_{t-1} + \varepsilon_t$ Y_t represents random-Walk with drift and trend.

Where 't' represents the time or trend variable. In all the above cases, a unit root is the null hypothesis, $\delta = 0$, $\delta = \rho - 1$, It means that the unit root and the time series are not stationary. The alternatehypothesis is $\delta < 0$, i.e. time series is stationary whereas, the probability of alternate hypothesis i.e. $\delta > 0$ is cancelled out because in this case $\rho > 1$ which is not possible (Dickey & Fuller, 1979).

4.1.4 The Augmented Dickey Fuller Test

The monumental work on checking for a unit root in times series data has been done by Dickey and Fuller (Dickey &Fuller, 1979). It is continuity of Dickey Fuller (DF) test which eradicates all the structural aftereffects of autocorrelation in given time series. ADF test is used to check the complexset of time series models.The ADF value, incorporated in the test gives a negative figure.If value of ADF is negative then the hypothesis is rejected and presence of unit root is concluded at some level of significance.The model is:

$$\Delta y_t = \alpha + \beta t + \gamma y_{t-1} + \delta_1 \, \Delta y_{t-1} + \cdots + \delta_{p-1} \, \Delta y_{t-p} + \varepsilon_t$$

$\alpha$is constant, β represents time trend coefficient while *p* is lag order of autoregressive process. Applying α= 0 and β = 0 refers to estimating random walk**,** while β = 0 refers to estimating random walk model with drift.

4.1.5 Cointegration

It can be defined as:

Given a set of I (1) variables {x1t , . . . , xkt}. If a linear combination of all vars and vector exists ¥â

So that

¥â1x1t + . . . + ¥âkxkt = ¥â

¡Çxt . . . trend-stationary

¥âj. = 0, j = 1. . .k. (Trend-stationarity means that after subtracting a deterministic trend process is I (0).Then the

x¡‾s are cointegrated of order CI(1,1).

¥â¡Çxt is a vector of (trend-) stationary variables. (Osterholm, 2007)

4.1.6 Johansen Cointegration Test:

The Johansen co-integration analysis shows the long running relationship between variables, and if co -integration is confirmed in the model the balance regression residuals can then be used to estimate the error-correction model VECM to detect a long time-lasting relationship between the poverty and independent variables. Standard Granger causality test results are not valid, although two variables are non-stoppable and cointegrated. Stationarities characteristics shall be analyzed as Engle and Granger (1987) have stated. However, if no co-integration of the variables is possible, the standard Granger causality test will be valid. And if they are non-stationary and cointegrated, "vector error correction model (VECM)" will be used for examining the causal relations; else, a "vector autoregressive (VAR)" model will be applied in the case of no cointegration among variables (Harahap, 2012).

4.1.7 VAR or VECM Model

We have to go through the initial step of the co-integration test in order to find out where a VECM model could be considered as the basis of causality testing. We use the VECM model if there is no cointegration. We reject the hypothesis that we would not even estimate the VECM model as "no cointegration." This is a typical "preliminary testing" example. In other words, it depends on an earlier test-a non-cointegrate test-that framework (model) selected as the basis for the non-causal test. Therefore, the following is an important question:

If we test for non - cointegration first and then perform another test (conditional on the results of this test), the characteristics of this second test are as follows:

If we choose to use VAR and use the other form, the second test (the no causality test) will be of a single form. In fact, the second test is a random mix of two tests when we pretest. The actual test statistics are a weighted sum of the test statistics obtained by using a VAR model and the test figures obtained by using a VECM model. And, with values that depend on the properties of the previous (non-cointegration) test, the weights are random. Decide on a VAR model or a VECM model during testing for no cointegration.

In particular, the significance (and hence the power) of the final test will almost certainly be distorted. We may think the non-causality test is applied at the 5 percent level, but the real meaning level–the actual rejection rate when this hypothesis is wrong. And that could cause us trouble.

The VECM integrates short - ranging information, which may be more powerful testing within the context of VAR models than their equivalents(Gujrati, 2004).

4.1.8 WALD Test

The WALD test (F-statistic) is calculated to find out the short-run relationship between variables. The Wald test can be conducted by limiting the expected short - term poverty - rate coefficients and the adult literacy rate. The null and alternative hypotheses are stated below:

Ho: There exists no short-run relationship between literacy rate and poverty in Pakistan.
Against the alternative hypothesis
H1: There exists a short-run relationship between literacy rate and poverty in Pakistan.

With the tabled critical values, the calculated value of F-statistic will be evaluated. The critical values with a lower bound assumed that variables of order zero, first difference, or second difference were incorporated according to these authors. If, then, the lower limit is more than the F-statistical value, the null hypothesis is accepted and the relationship between education variables and poverty does not continue for many years (Zapata, 1997).

5.1 RESULTS AND DISCUSSION

There is a root unit for a non - stationery series. The most effective root test of the Stationary Examination tests is Augmented Dickey Fuller (ADF) (Cheung, 1995).

Ho: Variable has a unit root or it is not stationary.

All the variables got stationery at first difference with trend and intercept.

$$\Delta Pt = \beta 1 + \beta 2t + \delta Pt - 1 + \sum \Delta Pt - i\ \alpha i + et$$

If p is less than 5% or the critical value is less than test statistics, the norm is that null hypothesis Ho is rejected. The absolute test statistic value for a percentage of the population below national poverty line is 6.15% and p is 0.00%. Ho is therefore rejected, as p is less than 5%, and the variable has become stagnant at first difference (Weshah, 2003).

The model for Adult Literacy Rate is:

$$\Delta Lt = \beta 1 + \beta 2t + \delta Lt - 1 + \sum \Delta Lt - i\ \alpha i + et$$

In the percentage of adult literacy rate 5.33, an absolute t-statistic value, which exceeds critical values and 0.0005 percent is a value of p, which is less than 5 percent, so Ho is rejected.

Poverty is considered as a dependent variable p, and independent variable literacy for adults. The Johansen cointegration test was used to determine long-term relationships between the variables. Firstly, to check the presence of stationarity in data unit root test was applied. Both variables got stationary at 1st difference. It should be kept in mind that the entire variable must be integrated in the same order.

Table1 - Unit root test

	Test critical values: (5% level of sig.)	t-Statistics	Prob.
Unit root Test for P		-6.155705	0.0000
	5% level	-3.526609	
Unit root Test for L		-5.339157	0.0005
	5%	-3.526609	

The Johansen approach to co-integration has been used to determine the number of co-integration relations. Trace statistics and maximum Eigen values can control the number of roots. The number of cointegrated vectors in the model are estimated by trace statistics. The null hypothesis was: Ho: No variables are cointegrated.

The first Column is the number of null-hypothesized co-integration relations, the second Column is the ordered model Eigen values, the third is the statistics and the last two columns are the critical values for 5 %. If p is less than 5 %, or critical value less than t-states, Ho was rejected according to rule.

Trace statistics from the table are 27.4 higher than 20.2 with a p value of 0.004. This result shows only one cointegration equation of 1% importance. Because p is less than 5% and the trace data is more than critical, Ho is denied. This means that co-integration between variables shows a long-term relation between the rate of poorness and literacy.

Table2 - Johansen's LR equation of Pakistan

P	L	C
1.000000	0.546822	29.62658
	(0.27760)	(10.6705)

$$p = - 0.54L$$

This shows that a change of 1 percent in p leads to a L change of 54 percent in the other way. The value shows the value of the coefficients in the parenthesis. VECM is applied in order to identify a short - term connection between poverty and education.

Equation (1) indicates six coefficient values, C (1) indicates error correction, which is one period of residual laggard of the co-integrated equation. The negative sign of the error coefficient shows its value to be not significant since the p is less than 5 percent. C (6) shows or intercepts the constant. The probability of coefficient of first order difference of poverty rate (0.06) is statistically insignificant at 1% level of significance. This negative sign shows that it has a short run impact on literacy rate. The coefficient of error correction term is equal to -0.18. This indicates that about 18% of variations would be adjusted with in the period of one year.

WALD test shows short run causality from education to literacy

Independent variableseducations are C (4) and C(5).

Ho: C(4)=C(5)=0

The WALD test results show p is 96.5 %, more than 5 %, so that Ho is accepted. This means that there is no short - term causality between poverty and education, and that together there is no economic growth.

Table3: WALD Test

| Test Statistic	Value	df	Probability
t-statistic	0.043424	33	0.9656
F-statistic	0.001886	(1, 33)	0.9656
Chi-square	0.001886	1	0.9654

5.2 Comparative Analysis

The impact of education on economic growth is positive and significant. The role of human capital in boosting economic growth is important, as it generates employment and helps to reduce poverty. It improves living standards and briefly increases an economy's overall growth. This argument was endorsed by Afzal et al. (2010) and the associations between education, poverty and economic growth were investigated in Bangladesh, India, Pakistan and Sri Lanka. The researchers confirmed that education and economic growth have a positive connection, while poverty was reversely linked to economic growth. The negative but insignificant relationship between economic growth and poverty has also been confirmed by Chaudhary and Rehman (2009). Furthermore, Afzal et al. (2012) have also found that education has had a positive and significant impact on economic growth while poverty and economic growth are interconnected negatively.Permani (2008) and Kakar et al. (2011) confirmed positive and long run relation of education with economic growth (Afzal et al., 2012).

Reham andPeng (2012), Chaudhary et al. (2009), and Islam et al. (2007) investigated the connection between economic growth and education. The long - term relationship between the variables was checked by all researchers. According to Reham andPeng (2012), and Chaudhary et al. (2009), unidirectional causality existed between the variables that run from economic growth to education while Islam et al. (2007) and Barro and Lee (2012) found bidirectional causality between education and economic growth.

Many researchers found significant and long run relationship among school education& higher education with economic growth. While,Afzal et al. (2010) have been identified inverse relationships between education at school and economic growth. In addition, researchers also confirmed that school education is directly related with economic development and that poorness and long - term growth are in reverse.

The Adult literacy rate in Pakistan showed increasing trend. It rose from 37.8 % in 1995 to 55% in 2011. Similarly, in Bangladesh, literacy went from 38% to 58% from 1995 to 2011. India made progress in education sector too. Its literacy rate went up from 52% to 63% over the years 1995-2011. In case of Sri Lanka, the literacy rate showed significant development. Its literacy rate went from 90% in 1995 to 98% in 2013 (CIA World Factbook, 2011).

Figure2 - Graph of P and L
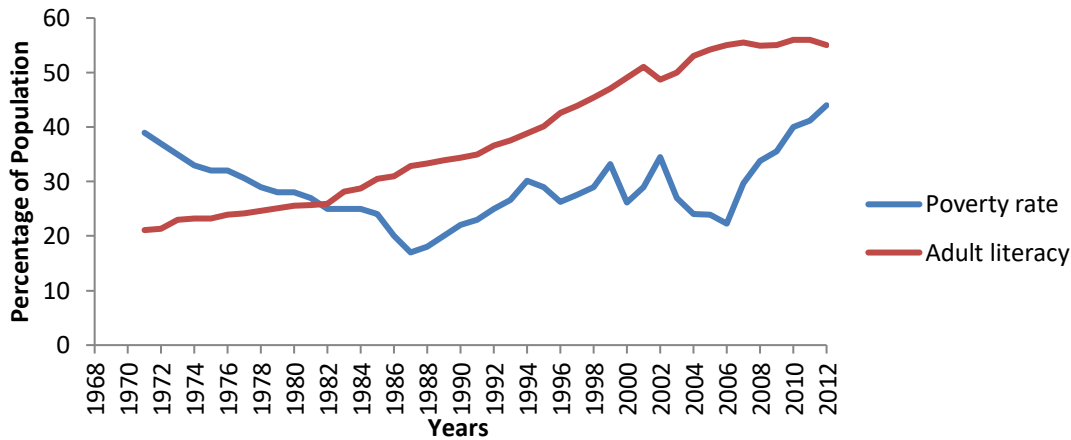
6.1 CONCLUSION

The research concluded that just by increasing public expenditure on education without focusing on poverty reduction and literacy rate is not enough to achieve education status and economic growth. Pakistan has certain social and economic issues including those related to education. Availability of education is the way to increase literacy rate in the region. Taking into account the lack of resources, all governments must consider allocating more funds for education. Until now, all these countries have been supporting their education sector from public funds whose percentage is very low that is between 2% and 4% of GNP. As there is clear evidence that education can lesson poverty but it is just one of various factors that hinder the availability of education. In order to decrease poverty rate it is important not only to enhance access to education but also to highlight the importance of education. Moreover, there is primarily great advantage of focusing on female education in the region.

Poverty is just one of the basic factors restraining learning through education. On the other hand, it is essential to open adequate schools in rural areas, to provide adequate funds. Regional collaboration in education would enhance the pace of progress. Education is essential to reducing poverty and improving living standards. The main area of concern is to get things better and get rid of poverty.

The findings of the research suggested that public as well as private sector should pay due attention on the short as well as long run solutions of poverty elimination. The study recommends growth and education for poor people in Pakistan.

Unit root tests using the ADF have been performed before co-integration testing. The t-values from the ADF reported showed that the underlying series at first seemed stationary. The cointegration of Johansen confirmation that the variables in the model have no strong and stable long-term relationship. The results of the co-integration confirmed the long-term relationship between education and economic growth, when poverty is used as a variable measuring variable for economic growth. Education only has a positive and significant impact on economic growth

in LR. An effective way to reduce poverty and increase economic growth in Pakistan could be a high literacy rate. Poverty and education are inverse and closely linked.

Table4: Results of Pakistan

	Test critical values: (5% level of sig.)	t-Statistics	Prob.
Unit root Test for P			
		-6.155705	0.0000
	5% level	-3.526609	
Unit root Test for L			
		-5.339157	0.0005
	5%	-3.526609	
JohansonCointegration Test			
	20.26184	27.49368	0.0042
VECM Test	C(1)		
		-1.884636	0.0683
WALD Test			
		0.043424	0.9656

The model showed a statistically significant adult literacy rate. A bidirectional relation with poverty in the region has been observed for adult literacy. Some of the most important challenges for those three countries are low rates of literacy, poor facilities, inadequate education, high dropout rates, and inadequate funding for the education sector. Additional funds are important but must also be checked for the most efficient and effective use. Besides good education, many other things like firm passion, stable political and economic conditions and, indeed, good fortune are essentially needed.

7.1 PRACTICAL IMPLICATIONS

Education has powerful impact on the growth of any nation. The dropout rate in schools can be decreased by reducing school costs for example; by eliminating school fees or giving scholarships to attend the school. In circumstances of floods and other natural disasters, educational facilities should be re-established as quickly as possible because it is basic way of re-establishing normalcy. Extraordinary efforts should be made to educate underprivileged groups such as females, cultural minorities and rural residents, disabled persons, and street children to increase literacy rate and ultimately, economic growth.

Growth should be measured by education status and poverty reduction because generation of income and employment are crucial for economic growth. This issue can be further addressed through microfinance and social safety nets. It is further recommended that the association between economic growth and poverty should be explored in the presence of macroeconomic variables such as physical capital.

The study also recommends that Pakistan should benefit from poor growth and education. Pakistan's growth must lead to improved education and poverty reduction. Poverty reduction can be critical to growth and training that generates income and jobs for the country's poor. Poverty

can also be reduced if social security programs are introduced in Pakistan's lower socio-economic segment.

The interdependency between the variables suggests that policies should be formulated that would have a long lasting positive impact on the education status of the population. To achieve universal primary education, completion of a comprehensive basic education is mandatory. Millions of kids begin school, but end up dropping out. School systems are constantly underfunded in these countries and they lack adequate funds to provide better facilities. For economic growth, expenditure on education is vital. Education contributes both individually and collectively to poverty reduction and economic growth.

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