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## Research Article

# Exploring the Socio-Economic Determinants of Higher Education in Pakistan

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## ABSTRACT

This endeavor investigated the impact of socio economic determinants of higher education in Pakistan and the change in their role over time. Nationally representative Pakistan Social and Living Standard Measurement (PSLM) surveys data were used for different periods (2015-16, 2010-11&2005-06). Multinomial logistic regression has been used to find the impact of socio-economic determinants of higher education in Pakistan, as the dependent variable is binary. Findings of the study show that among socio economic determinants, the Education of household head is most significant determinant of higher education at rural urban level and in overall Pakistan for all three time periods (2015-16, 2010-11 & 2005-06). During survey years, in overall Pakistan, there is a significant role of food expenditures, number of sources of income and dependency ratio. The role of remittances is significant in Rural and Overall Pakistan. Regarding professions, the role of remittances is important Urban Pakistan and overall in Pakistan, there is a significant role of professionals and managers. The role of Craft & trade related workers, plant & machine operators, assemblers, and elementary occupations is significant in Pakistan. The present study strongly recommends that literacy rate should be increased in Pakistan as it will add to human capital of the country. Vocational training and IT related programs should be promoted as they have multiplier effects on earnings required to get higher education.

**Key Words:** Education, PSLM, Income, Households, Multinomial Logistic Regression

## INTRODUCTION

Education is a process of training an individual to grow and develop potential and capabilities so that he/ she can achieve success in life. Learning is a process spanning over whole life. Agulanna (2009) argued that education is one of the basic requirements that are essential for development and growth of both developing and developed countries. Mostly, the quality of education offered is a determining factor for advancement in any country. Education provides connection between main aim of education, basic life services and important life tasks. It must support a person to live creatively (Alivernini, F. (2010).

Akanle, (2007) stated that development of human capital through education should be the foundation of all development. Consideration must be given to the fact that education is a vital tool for social, economic and political endeavors in reaching a satisfactory level of accomplishment. United Nations Educational Scientific and Cultural Organization, UNESCO (2003) stated that relegated populations can get rid of all slums by attaining a higher level of education which will allow them to play a vital role in the advancement of their countries.



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Findings reveal that the major place of interaction and first teaching centre for children has been located in their homes (Van den Broeck, 2004; Amjad & Faheem, 2015). Likewise, Tella (2003) thought that the schooling process is greatly influenced by a child's home background as parents play an important role in developing their children's learning and discipline. On the other hand, it was found that students' home background was a key indicator of whether they are successful or not at school. Consequently, students' home remains an important indicator of their academic purpose as described in Ahmed (1991).

Eamon (2005) examined whether parents' attitudes and involvement in their children's education had an impact on how well they did. The main cause of the educational disparity seen in schools was a variety of parental attitudes to children's learning process, as shown by Thoron, (2001). The social class of students was identified as the main reason for these differences in attitudes and commitment from parents to education which has an effect on children's level of achievement. In addition, by ensuring a favorable atmosphere for the students both at home and in schools, this house complements government and education efforts (McNutt Jr., 2001; Bloom, 1981). In general, differences in parental status, family income and the quality of parent child interactions can be attributed to links between home variables and children's educational attainment (Lubienski & Gutierrez, 2008; Ali & Shah 2024).

Various economic, demographic, educational and social factors of students' families remain very important for researchers. A study by Israel, Beaulieu & Hartless (2001) showed that parents are associated with children's educational attainment through their socioeconomic status. A number of theories have been put forward demonstrating that parents' motivation has a great impact on the academic interests of their children (Bandura, Lave & Wenger, 1991). However, their influence on school performance cannot be undone by home background factors that are unpredictable and changing over time.

Tertiary education refers to the post-secondary education, technical training institutes, vocational schools, colleges and public & private universities. Higher education is helpful in fostering growth, poverty alleviation and enhancing shared prosperity. Highly skilled personnel having lifetime access to firm post-secondary education are a prerequisite for growth and innovation. Highly educated individuals are more employable, productive and earn higher wages. They also manage economic shocks better.

Tertiary education benefits the individual and society altogether. Highly educated people are more environmentally cognizant having healthier habits and have a higher level of civic participation. Higher earnings resulting in augmented tax revenues, healthier children and small family size altogether build stronger nations. Tertiary education institutions organize individuals and provide them with relevant and sufficient job skills shaping them to be active members of respective societies and communities.

Tertiary education enhances the potential and supports global (global, national, and local) development. Higher education may assist in accomplishing and surpassing the results enshrined in Sustainable Development Goals (SDGs). Universities work with governments and private sector to realize global development potential. However, restricted academic freedom and institutional sovereignty hamper the full realization of higher education. Higher education may offer a strong potential for contributing to development (Boni and Walker 2016, Castells 1994, McCowan 2016, 2019, Oketch et al. 2014, Owens 2017).

Tertiary education contributes to development in essentialist and anti-essentialist ways to achieve the Sustainable Development Goals (SDGs). Essentialism identifies various properties of a phenomenon as essential and others as accidental, differentiating between essence and accident (Ellis 2002; Yablo 2016). The essentialist framing assumes that the essence of development is the advancement of human capital and the modernization of societies. Accordingly, the essentialist framing of the associations between higher education and development essentializes the role of universities in the advancement of human capital and the modernization of societies. In this age of economic integration, higher education is of prime importance and considered a capital investment as it leads to socio-economic development. Fresh young men and women prepared with advanced education skills in modern times guide nations in the direction of equality and justice. Higher education has not been given top priority in developing countries like Pakistan (Haider, 2008; Diepen, 2004). World Bank (2000) report shows it will be more difficult for developing countries to take advantage of globalization and knowledge based economy if they do not provide equal importance to better education. It is widely recognized that highly educated females play an important role in human capital formation. Higher education could be an important basis for empowering individuals (Ejaz & Ali, 2004).

Education has been seen as an important factor in the development of each country. Not only does it play a leading role in raising people's awareness and information, but it also plays an essential part in the economic and social

development of the country. The importance of initiating and carrying out educational programs both for economic development as well as society's social needs has been pointed out in this context.

Education has a major role to play in developing skills that are of high value for improvement as part of the Human Capital Development. One of them is social factors which play an important role in the achievement of academic results and are also affected by parents' socioeconomic status. In many cases, parents' level of education, family income and the size of families between kith and kin are linked to their social status. The family characteristics can be called such factors (Falaye & Ayoola, 2006). The status of the social situation has a bearing on academic resources. It is considered that students will receive a higher degree of academic resources with exceptional socioeconomic status in accordance with Bourdieu and Lareau's theories on cultural and economic capital as well as the theory of social discrimination. Like other developing countries, Pakistan has many socio-economic problems. These challenges include rising poverty, high inflation, unemployment, heavy external and domestic debt, high fiscal deficit, current account deficit, high population growth rate, energy crisis and climate change, low literacy rate, regional disparities in education, domestic political uncertainty, high interest payments, and the loss of access to international capital markets etc. Economic recovery necessitates focus on resources to combat these challenges.

Due to an increase in foreign remittances, poverty decreased but socioeconomic conditions could not be improved because human capital remained stagnant and poor. Often the floods negatively affect health and education outcomes particularly in rural areas, ultimately disturbing long-term human capital accumulation. Mostly poor households depend on agriculture, small scale manufacturing and construction activity and hence they stay vulnerable to climate and economic shocks. All these factors, accompanied by energy crisis, terrorism, wealth concentration, corruption, youth unemployment, Lack of quality education, Poor health facilities, tax evasion, bad governance, have adversely affected economic development of Pakistan.

Education is seen as the key factor that can eliminate such problems, which also has a significant impact on all other aspects of human life. The government's determination to achieve the Sustainable Development Goals, in particular the 4th goal, aims to stimulate lifetime education prospects for all citizens and to ensure equitable and inclusive quality education through visible progress in the country's education system (Gall, et al., 1996; House & Telese, 2008).

In addition to the importance of education, Pakistan's literacy rate is only 59.13 %. Literacy in Pakistan is defined as "ability to read and understand simple text in any language from a newspaper or magazine, write a simple letter and perform basic mathematical calculation (i.e, counting and addition/subtraction)." The literacy rate in Pakistan is 72.5% for men and 51.8% for women, nearly 10 % in the last three years. Province wise literacy rate in Pakistan has improved from 58% to 70% for males and females. In order to remain at the 150th position in UNDP rankings, Pakistan has a very low 0.562 Human Development Index. The expenses on education remained only 1.7% of GDP during the period 2022-2023 (Pakistan Economic Survey, 2022-23). Understanding the importance of education in quality research for continuous learning and strengthening of applied fields of science and technology in the country, government of Pakistan established Higher Education Commission (HEC) in 2002. It took various initiatives to increase the standard of learning at national level. In Pakistan, the most important sources of learning are universities. Current study is an attempt to investigate the impact of socioeconomic factors on higher education in Pakistan. Present study aims to analyze role of socio-economic factors in attainment of education and especially higher education in Pakistan and then to do comparative analysis of socio economic factors in attaining higher education in Pakistan over different periods (2005, 2010& 2015).

Rest of the paper is organized as follows: literature review is given in section 2. Data, methodology and estimation procedures are given in section 3. Section 4 is about results and discussion. Summary, conclusions and policy recommendations are presented in section 5.

## LITERATURE REVIEW

Education is one of the most important variables in the development of human capital around the world. Numerous research studies have revealed that "the rate of economic growth in developed countries cannot be attained without the accumulation of human capital" (Javed, Khilji & Mujahid, 2008). It is the steady growth of the knowledge economy that has created a powerful new impetus for ordinary people to develop their skills and abilities through education (OECD, 2012).

Rifa'i, A., et al. (2019) found that the reason behind students' entrance in higher level of education is related to different variables. The study used a binomial logit model to explore the factors that are useful for students to obtain

higher-level education in Indonesia using the Family Life Survey (FLS). Different socioeconomic factors like income, education of father, education of mother, household status and size of the household were found to be important variables for involvement in higher education attainment.

Al Darwish, S. (2016) pointed out the strong impact of parents' education, social status and financial position on college students by motivating them to follow higher degrees. A sample of 313 students was selected randomly from public and private universities of Kuwait to record their responses to a questionnaire. It was found that socio-economic background of a family, parents' education and academic achievement of students were the significant factors contributing to students' decision to get enrolled for higher education.

Mirza (2015) carried out a research study to explore the association between socio-economic status and student success and pointed out that social and economic conditions have a great impact on their performance. Khan and Shah also conducted research studies on factors related to the achievement of students' average degree at a state university. Azhar et al. (2014) explored that there are better resources and facilities to take advantage of good parents. Good families have chance to enroll in decent schools that provide a solid foundation for careers.

Li, (2013) claimed that students from less rich rural families feel strange in extraordinary environment of Chinese universities linked with urban peers because of their exclusion from high societies and common activities.

There is a correlation between parents' education and students' education. Pupils from fortunate families have access to more distinguished institutions than their less fortunate peers (Stull, 2013).

Jeynes, (2012) examined the association between various kinds of parents' participation and student success and found a significant relation between educational achievement and parental position. The results showed a significant relationship between status of parents and academic achievement.

Farooq, Chaudhry, Shafiq, & Berhanu, (2011) examined various reasons that affect learning. For the study, 600 teenagers were selected. Results of the ninth grade annual examination assessed academic performance. Data were analyzed using ANOVA and t-test to observe the role of various factors on students' success. Social and economic status and education of parents were found to be significant for students' general academic attainment, in addition to math and English language success. Higher and average socio-economic levels affect learning more.

Demir, (2010) revealed that students of educated parents have knowledge about mathematics, science and other subjects as compared to those students whose parents were less informed about these subjects. This relationship shows that educated parents provide a suitable environment for educational attainment.

Uwaifo (2008) found a significant difference between the study of impacts of family background and parenting on success of students Nigeria University and also performance of students belonging to the same parent family and the family structure of two parents.

Hanson and Chen, (2007) pointed to the association between socioeconomic status and healthy student behavior. It was concluded that lower social status was related to poor diet, an increase in smoking and low physical activity.

Alomar, (2006) stated that education is easily accessible, young people are making progress in higher education but there are inequalities in decision-making patterns and experiences. Academic success is deeply rooted in the social process, such as learning by observing parental modeling, while others struggle with their personality traits.

Salvanes, (2005) argued that information and communication technology can improve the effectiveness of learning approaches of teaching and knowledge of traditional education. Better learning performance and thus greater probability of getting included or remaining in education process for those using modern ICT has been proved by (Lindroth & Bergquist, 2010; Ali et al., 2023).

Bratti & Staffolani, (2002) detected that the best key indicators for future achievement of students are reflected by their earlier academic results which reveals that better preceding outcome leads to enhanced educational achievement in future activities of students.

Simiyu, (2001) emphasized that income is derived from profit, rents and earnings. He said that income can also come in the form of pensions, royalties, interests, trusts or financial support by the governmental or from family. Income is seen as absolute income and relative income. In absolute income, income and consumption increase at different rates. In relative income savings and consumption of a family are compared with other families income and consumption. Socio economic status is widely measured by income.

Kim et al. (2013) examined the relationship between economic status of a family and parents' commitment to educational achievement with the conclusion that students from wealthy families had more access to quality educational institutions. One needs to consider the important part of hereditary element for achieving higher

education. Rowe et al. (1999) identified that difference in parent's inherited support also impacts parents' education and students obtain hereditary wealth distributed among them by parents.

Swart, (1999) pointed out that university entrance is based on previous examination score that influences future performance. These opinions depict that academic performance is related to socio socioeconomic background of the student.

Bankston & Caldas, (1997) established that educational achievement is highly affected by educational background and the occupational status of a family. The greater parental involvement results in encouraging approaches to school and increases homework routines leading to academic success. Mullis, (2012) determined that mother's education had 20% bigger effect on academic attainment than father. Parental education predicts students' behavioral and educational concerns.

## DATA, METHODOLOGY AND ESTIMATION PROCEDURE

### Data

Table 1. No. of Enumeration Blocks & Villages according to Sampling Frame

Name of Province	No. of Enumeration Blocks	No. of Villages
Punjab	14,550	25,876
Sindh	9,026	5,872
KPK	1,914	7,338
Balochistan	614	6,558
A.J. K	211	1,655
Northern area	65	567
FATA		2,597
ISLAMABAD	325	133
Total	26,705	50,596

Source: Pakistan Bureau of Statistics

The present study uses household level survey data collected by the Pakistan Bureau of Statistics, Government of Pakistan. Survey data from three different survey years: 2015-16, 2010-11, 2005-06 are used for analysis purposes. Table 1 reports details of number of enumeration blocks & villages according to sampling frame. Similarly, Table 2 shows sample details of 2015-16, 2010-11, 2005-06 data sets.

Table 2. Sample of 2015-16, 2010-11, 2005-06 Data Set

Year	2015-16	2010-11	2005-06
Total Households	3 crore 98 lac	3 crore 20 lac	2 crore 20 lac
Selected Households	24238	16341	15453
Highly Educated Households	5739	3348	2164
Percentage of Highly Educated Households	23.68%	20.49%	14.00%
Total number of people	137485	57301	28039
Highly Educated persons	9967	4565	3300

Source: Authors' own calculations

### METHODOLOGY

The following models were estimated to establish important determinants of higher education through multiple regression:

$$Edu_i^{2005} = \beta_0 + \beta_{1m} Socfac_{mi} + \beta_{2j} Ecofac_{ji} + \delta_k Control_{ki} + \mu_i \quad (1)$$

$$Edu_i^{2010} = \beta_0 + \beta_{1m} Socfac_{mi} + \beta_{2j} Ecofac_{ji} + \delta_k Control_{ki} + \mu_i \quad (2)$$

$$Edu_i^{2015} = \beta_0 + \beta_{1m} Socfac_{mi} + \beta_{2j} Ecofac_{ji} + \delta_k Control_{ki} + \mu_i \quad (3)$$

Where Edu denotes schooling years, Socfac are Social Factors, Ecofac for Economic Factors and Control for Control Variables. Social factors in the attainment of education in Pakistan are household head education, household head gender, household size, different household head occupations like managers, professionals, technicians and associate professionals, clerical support workers, service and sales workers, skilled agricultural forestry & fishery workers, plant and machine operators & assemblers and elementary occupations. Economic factors in attainment of

education in Pakistan are the number of sources of income, family income, ratio of food expenditure to total expenditures and remittances.

The present study undertakes multiple regression estimation to establish relationship between dependent variable and independent variables.

Being dependent variable a binary categorical variable, present study proposed and estimated logistic regression. The logistic regression variate is alike the multiple regression variate. It's an indication of the single multivariate relationship. Moreover, new methods of predicting accuracy are also employed because the dependent variable is a categorical one.

The study has estimated a number of models based on binary Logistic Regression to quantify the role that social factors play in achieving higher levels of education at household level, as given below:

$$Highedu_i^{2005} = \beta_0 + \beta_{1m} Socfac_{mi} + \beta_{2j} Ecofac_{ji} + \delta_k Control_{ki} + \mu_i \quad (4)$$

$$Highedu_i^{2010} = \beta_0 + \beta_{1m} Socfac_{mi} + \beta_{2j} Ecofac_{ji} + \delta_k Control_{ki} + \mu_i \quad (5)$$

$$Highedu_i^{2015} = \beta_0 + \beta_{1m} Socfac_{mi} + \beta_{2j} Ecofac_{ji} + \delta_k Control_{ki} + \mu_i \quad (6)$$

where *Highedu* is a binary variable being equal to 1 when a household member is highly educated, while otherwise zero.

The following models were used to estimate the probabilities/ likelihood of being 1 and the effect that change in socioeconomic factors will have on it can also be estimated.

$$\Pr(Highedu_i^{2005} = 1) = \frac{1}{1 + \exp[-(\beta_0 + \beta_{1m} Socfac_{mi} + \beta_{2j} Ecofac_{ji} + \delta_k Control_{ki} + \mu_i)]} \quad (7)$$

$$\Pr(Highedu_i^{2010} = 1) = \frac{1}{1 + \exp[-(\beta_0 + \beta_{1m} Socfac_{mi} + \beta_{2j} Ecofac_{ji} + \delta_k Control_{ki} + \mu_i)]} \quad (8)$$

$$\Pr(Highedu_i^{2015} = 1) = \frac{1}{1 + \exp[-(\beta_0 + \beta_{1m} Socfac_{mi} + \beta_{2j} Ecofac_{ji} + \delta_k Control_{ki} + \mu_i)]} \quad (9)$$

### Estimation Procedure

Secondary data were used to achieve the study objectives. To investigate the impact of socio economic determinants on higher education in Pakistan, different surveys were explored. Among them, PSLM survey was considered more appropriate as it is a nationally representative data for individual and household level. Further, this survey is conducted annually with proper monitoring, having validity and reliability. The data of different fiscal years (2005-06, 2010-11 and 2015-16) were taken to make the study more comprehensive and reliable, and to see occurrence of significant change in the determinants of higher education. Pakistan Bureau of Statistics (PBS) conducts this survey being answerable for collection and giving out consistent data and statistical information to policy makers and researchers.

In step 1, for measuring education, number of years of schooling of individuals was used as a proxy and through multiple regression, significant socio economic determinants were found. In the second step, for measurement of higher level of education, number of years of schooling was used as a proxy. All individuals having 14 or above years of completed education were placed in this category. At household level, a categorical variable was constructed having zero and one values. It assumed value of 1 for a household having a highly qualified member while 0 otherwise. In this step, multinomial logistic regression was used to find the impact of socio-economic factors contributing to higher education in Pakistan, as the dependent variable is binary.

Different social factors that can cause or promote higher education are education of head of household, size of household, number of siblings, occupation of head of household, gender of head of household, no. of sources of income etc. The economic factors that can play role in attainment of higher education are family income, ratio of food to total expenditures, dummy remittances, wealth and land ownership (Agri and non-Agri), livestock etc.

Social and economic factors that have importance in attainment of higher education are education of the household head, income sources, remittances, occupations, ratio of food expenditure to total expenditures.

## RESULTS AND DISCUSSION

This section presents the results of socio-economic determinants of higher education in Pakistan. Different models have been estimated to find the determinants of higher education at the national level as well as overall rural & overall urban levels of Pakistan. The socio-economic determinants of higher education are found for the years 2005-06, 2010-11 and 2015-16.

Table 3. First Step Multiple Regression Model

Years of Schooling (Education)	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Household head education	.362	.002	146.06	0	.357	.366	***
Dummy of household head gender (male=1)	-1.473	.059	-24.92	0	-1.588	-1.357	***
Household size	-.055	.003	-16.44	0	-.062	-.049	***
Household Head Occupation							
Armed forces occupations (Reference category)							
Managers	2.094	.115	18.19	0	1.868	2.32	***
Professionals	4.233	.111	38.31	0	4.017	4.45	***
Technicians and associate professionals	2.746	.133	20.70	0	2.486	3.006	***
clerical support workers	3.569	.156	22.82	0	3.262	3.875	***
service and sales workers	.957	.066	14.51	0	.828	1.086	***
skilled agricultural, forestry and fishery workers	-.455	.077	-5.94	0	-.605	-.305	***
craft and related trades workers	.391	.081	4.82	0	.232	.55	***
plant and machine operators, and assemblers	.438	.097	4.51	0	.248	.628	***
elementary occupations	-.66	.068	-9.68	0	-.794	-.527	***
number of sources of income	.065	.01	6.45	0	.046	.085	***
Family income	0	0	30.86	0	0	0	***
ratio of food expenditures to total expenditures	-6.377	.12	-52.93	0	-6.613	-6.14	***
ratio of health expenditures to total expenditures	-6.448	.342	-18.86	0	-7.118	-5.778	***
ratio of total expenditures to total income	0	.001	-0.21	.837	-.003	.002	
Dummy of remittances (=1 if receives remittances)	.731	.053	13.82	0	.628	.835	***
Land ownership (in Acres)	0	0	0.15	.884	-.001	.001	
Constant	7.158	.082	87.61	0	6.998	7.318	***
Mean dependent var	5.374				SD dependent var	4.932	
R-squared	0.332				Number of obs.	110270.000	
F-test	2885.495				Prob > F	0.000	
Akaike crit. (AIC)	620405.903				Bayesian crit. (BIC)	620598.116	

\*\*\* p<.01, \*\* p<.05, \* p<.1 Source: Authors' own calculations

As a first step is, socio economic determinants of education are determined. Table 3 presents the results of multiple regression through which significant social and economic determinants of education are estimated. As a next step, this study incorporates logistic regression to find odds ratios of socio economic determinants of higher education in

Pakistan. The odds ratios have been reported rather to report the coefficients of logistic regression. The results of logistic regression models are given in Table 4.

Table 4. Socio-economic determinants of higher education in Rural Pakistan (2015-16)

Dummy_Higher Education	Odds Ratio	t-value	p-value	Sig.
dummy_gender_household head (male=1)	.654	-1.61	.108	
dummy_dep_ratio (=1 dep_ratio > 5)	1.556	4.25	0	***
dummy_income_sources (=1 if income_sources >1)	1.825	5.77	0	***
dummy_remittances (=1 if receives remittances)	1.699	3.03	.002	***
dummy_household_head edu (=1 if head edu >5)	3.404	11.33	0	***
dummy_foodx/x (=1 if foodx/x < 0.5)	2.232	7.10	0	***
Household Head Occupation				
Armed forces occupations (Reference category)				
Managers	.946	-0.11	.913	
Professionals	4.008	2.84	.005	***
technicians and associate professionals	.899	-0.21	.837	
clerical support workers	1.513	0.79	.431	
service and sales workers	.414	-1.81	.071	*
Skilled agricultural, forestry and fishery workers	.345	-2.21	.027	**
Craft and related trades workers	.275	-2.54	.011	**
Plant and machine operators, and assemblers	.189	-3.17	.001	***
Elementary occupations	.14	-3.94	0	***
Constant	.071	-4.78	0	***
<hr/>				
Pseudo R-squared	0.253			
Chi-square	1080.236			
Prob > chi2	0.000			
Number of obs.	6672			

\*\*\* p<.01, \*\* p<.05, \* p<.1

Source: Authors' calculations

Receiving remittances also has positive impact on the attainment of higher education and households that receive remittances 1.7 times more likely to attain higher education as compared to other households who do not receive remittances. Education of the household head at rural level has highest impact among all the determinants of higher education at rural level and households where household-head has more than 5 years of schooling are 3.4 times more likely to attain higher education as compared to the households who have less than 5 years of schooling. In rural Pakistan, several occupations of household heads are significant determinants of higher education when compared with Armed forces occupations. The head-occupation Professionals is a significant determinant and shows that household heads with occupation Professionals are 4 times more likely to be highly educated as compared to the household heads whose occupation is Armed forces occupations. The other significant determinants among head-occupations are forestry and fishery workers and Skilled agricultural, service and sales workers, plant and machine operators, and assemblers, craft and related trades workers, and elementary occupations and show that households with above mentioned head-occupations are less likely to be highly educated as compared to households with head-occupation Armed forces occupations.

Table 5 presents the results of socio-economic determinants of higher education in urban Pakistan. The role of gender of the household head and dependency ratio is insignificant in attaining higher education at the household level. While the role of income sources, remittances, education of household head and ratio of food expenditure to total expenditures is highly significant. Households having more than 1 source of income are 1.85 times more likely to get higher education as compared to households with a single source of income. Similarly, households that receive remittances are 2.17 times more likely to get higher education than households that do not receive any foreign remittances. In urban Pakistan, several household head-occupations also play a significant role in determining the attainment of higher education when compared with Armed Forces occupations. The chances of attainment of higher education for households with head-occupation Forestry and fishery workers and skilled agricultural,

Table 5. Socio-economic determinants of higher education in Urban Pakistan (2015-16)

Dummy_Higher Education	Odds Ratio	t-value	p-value	Sig.
dummy_gender_household head (male=1)	1.172	0.77	.444	
dummy_dep_ratio (=1 dep_ratio > 5)	.987	-0.24	.814	
dummy_income_sources (=1 if income_sources >1)	1.852	11.71	0	***
dummy_remittances (=1 if receives remittances)	2.168	5.88	0	***
dummy_household_head edu (=1 if head edu >5)	4.876	25.21	0	***
dummy_foodx/x (=1 if foodx/x < 0.5)	2.428	10.49	0	***
Household Head Occupation				
armed forces occupations (Reference category)				
Managers	1.173	0.46	.647	
Professionals	3.235	3.34	.001	***
technicians and associate professionals	1.012	0.04	.972	
clerical support workers	1	0.00	1	
service and sales workers	.365	-2.91	.004	***
skilled agricultural, forestry and fishery workers	.47	-2.06	.04	**
Craft and related trades workers	.25	-3.97	0	***
Plant and machine operators, and assemblers	.21	-4.40	0	***
Elementary occupations	.138	-5.56	0	***
Constant	.073	-6.33	0	***
Pseudo R-squared	0.258			
Chi-square	3908.276			
Prob > chi2	0.000			
Number of obs.	12656			

\*\*\* p<.01, \*\* p<.05, \* p<.1

Source: Authors' own calculations

Service and sales workers, plant and machine operators, and assemblers, professionals, craft and related trades workers and elementary occupations are significantly different from the chances of getting higher education of households with head-occupation Armed forces occupations. Households with head-occupation Professionals are 3.23 times more likely to attain higher education as compared to households with head-occupation Armed forces occupations.

Table 6: Socio-economic determinants of higher education in Overall Pakistan (2015-16)

Dummy_Higher Education	Odds Ratio	t-value	p-value	Sig.
dummy_gender_household head (male=1)	.974	-0.16	.874	
dummy_dep_ratio (=1 dep_ratio > 5)	1.036	0.74	.462	
dummy_income_sources (=1 if income_sources >1)	1.715	11.73	0	***
dummy_remittances (=1 if receives remittances)	1.872	6.07	0	***
dummy_household_head edu (=1 if head edu >5)	4.646	28.71	0	***
dummy_foodx/x (=1 if foodx/x < 0.5)	2.601	14.35	0	***
Household Head Occupation				
Armed forces occupations (Reference category)				
Managers	1.384	1.17	.244	
Professionals	3.749	4.72	0	***
Technicians and associate professionals	1.208	0.67	.501	
Clerical support workers	1.267	0.83	.404	
Service and sales workers	.445	-2.94	.003	***
Forestry ,Skilled agricultural and fishery workers	.302	-4.25	0	***
Trades workers and Craft workers	.306	-4.25	0	***
Machine operators, Plant and assemblers	.246	-4.94	0	***
Elementary occupations	.148	-6.73	0	***
Constant	.066	-8.31	0	***
Pseudo R-squared	0.283			

Chi-square	5765.821
Prob > chi2	0.000
Number of obs.	19328

\*\*\* p<.01, \*\* p<.05, \* p<.1

Source: Authors' calculations

Table 6 presents the results of socio-economic determinants of higher education in Pakistan overall. The role of household head-gender and dependency ratio is insignificant in attaining higher education at the household level. While the role of income sources, remittances, education of household head and ratio of food to total expenditures is highly significant. The role of education of household head is still

Table 7: Socio-economic determinants of higher education in Rural Pakistan (2010-11)

Dummy_Higher Education	Odds Ratio	t-value	p-value	Sig.
dummy_gender_household head (male=1)	1.098	0.31	.753	
dummy_dep_ratio (=1 dep_ratio > 5)	1.366	3.56	0	***
dummy_income_sources (=1 if income_sources >1)	2.101	8.52	0	***
dummy_remittances (=1 if receives remittances)	1.727	2.88	.004	***
dummy_household_head edu (=1 if head edu >5)	4.591	16.78	0	***
dummy_foodx/x (=1 if foodx/x < 0.5)	2.134	7.84	0	***
Household Head Occupation				
Armed forces occupations (Reference category)				
Managers	5.246	1.96	.05	**
Professionals	5.059	2.05	.041	**
Technicians and associate professionals	2.075	0.92	.357	
Clerical support workers	1.319	0.34	.73	
Service and sales workers	.65	-0.55	.585	
Skilled agricultural, forestry and fishery workers	.878	-0.17	.868	
Craft and related trades workers	.436	-1.03	.303	
Plant and machine operators, and assemblers	.654	-0.53	.594	
Elementary occupations	.348	-1.34	.181	
Constant	.038	-4.16	0	***
Pseudo R-squared	0.226			
Chi-square	1274.158			
Prob > chi2	0.000			
Number of obs.	7996			

\*\*\* p<.01, \*\* p<.05, \* p<.1

Source: Authors' own calculations

Highest among all the significant determinants of higher education in the case of Pakistan. Households with head-education more than 5 years are 4.65 times more likely to attain higher education compared to other households with head-education less than 5 years. Households that receive remittances are 1.87 times more likely to get higher education as compared to other households that do not receive foreign remittances.

Table 7 presents the results of Binary Logistic Regression for Socio-Economic Determinants of Higher Education at Rural Urban levels in Pakistan (2010-11). In rural Pakistan, only two occupations of household heads are significant determinants of higher education when compared with Armed forces occupations. The head-occupation Managers is a significant determinant and shows that household heads with occupation Managers are 5.25 times more likely to be highly educated as compared to the household heads whose occupation is Armed forces occupations. The other significant determinant among head-occupations is Professionals. Results show that household heads with occupation Professionals are 5.06 times more likely to be highly educated as compared to the household heads whose occupation is Armed forces occupations. All remaining determinants among head-occupations including Service and sales workers, Skilled agricultural, forestry and fishery workers, Craft and related trades workers, Plant and machine operators and assemblers, and Elementary occupations, are insignificant and play no role in attaining higher education as compared to households with head-occupation Armed forces occupations.

Table 8 details the results of socio-economic determinants of higher education in urban Pakistan. The role of gender of the household head and remittances is insignificant in attaining higher education at household level. While the

dependency ratio, income sources, education of household head and ratio of food expenditure to total expenditures are highly significant. The urban households with dependency ratio more than 5 persons are 1.49 times more likely to be highly educated as compared to those rural households where dependency ratio is less than 5 five persons. So in urban Pakistan the increased dependency ratio does not cause to reduce the chances of getting higher education at household level. Households having more than 1 source of income are 2.44 times more likely to get higher education as compared to households with single source of income. The role of education of household head is again highest among all the significant determinants of higher education in urban Pakistan. Households whose head-education is more than 5 years of schooling are 4.25 times more likely to attain higher education as compared to other households where household head-education is less than 5 years of schooling. The ratio of food to total expenditures also plays significant role in attaining higher education at household level and households with ratio value less than 0.5 are 2.24 time more likely to get higher education than the households with ratio value more than 0.5.

In urban Pakistan, several household head-occupations also play significant role in determining the attainment of higher education when compared with Armed forces occupations. The chances of attainment of higher education for households with head- occupation Managers, Professionals, Technicians and associate professionals, and Clerical support workers are significantly different from the chances of getting higher education for households with head-occupation Armed forces occupations. Households

with head-occupation Managers are 13.99 times more likely to attain higher education as compared to households with head-occupation Armed forces occupations. Similarly, households with head-occupation Professionals, technicians and associate professionals and clerical support workers are respectively 19.27, 7.30 and 8.16 times more likely to attain higher education as compared to households of reference category Armed forces occupations. While the chances of getting higher education of households with head-occupation Skilled agricultural, forestry and fishery workers, Service and sales workers, Elementary occupations Craft and related trades workers, Plant and machine operators and assemblers are not significantly different from the households of reference category Armed forces occupations.

Table 8. Socio-economic determinants of higher education in Urban Pakistan (2010-11)

Dummy_Higher Education	Odds Ratio	t-value	p-value	Sig.
dummy_gender_household head (male=1)	1.186	0.55	0.58	
dummy_dep_ratio (=1 dep_ratio > 5)	1.491	4.68	0	***
dummy_income_sources (=1 if income_sources >1)	2.435	10.70	0	***
dummy_remittances (=1 if receives remittances)	1.141	0.51	.613	
dummy_household_head edu (=1 if head edu >5)	4.247	15.57	0	***
dummy_foodx/x (=1 if foodx/x < 0.5)	2.243	10.36	0	***
Household Head Occupation				
Armed forces occupations (Reference category)				
Managers	13.992	3.31	.001	***
Professionals	19.268	3.74	0	***
Technicians and associate professionals	7.303	2.52	.012	**
Clerical support workers	8.161	2.66	.008	***
Service and sales workers	2.741	1.29	.198	
Skilled agricultural, forestry and fishery workers	3.479	1.55	.12	
Craft and related trades workers	1.794	0.74	.459	
Plant and machine operators, and assemblers	1.56	0.56	.574	
Elementary occupations	1.279	0.31	.754	
Constant	.018	-5.08	0	***
Pseudo R-squared	0.271			
Chi-square	1762.180			
Prob > chi2	0.000			
Number of obs.	5244			

\*\*\* p<.01, \*\* p<.05, \* p<.1 Source: Authors' own calculations

Table 9 gives the results of socio-economic determinants of higher education in Pakistan overall. The role of household head-gender is insignificant in attaining higher education at household level. While the role of the dependency ratio, income sources,

Table 9. Socio-economic determinants of higher education in Overall Pakistan (2010-11)

Dummy_Higher Education	Odds Ratio	t-value	p-value	Sig.
dummy_gender_household head (male=1)	1.138	0.61	.54	
dummy_dep_ratio (=1 dep_ratio > 5)	1.38	5.34	0	***
dummy_income_sources (=1 if income_sources >1)	2.168	13.08	0	***
dummy_remittances (=1 if receives remittances)	1.405	2.20	.028	**
dummy_household_head edu (=1 if head edu >5)	4.519	23.40	0	***
dummy_foodx/x (=1 if foodx/x < 0.5)	2.728	17.82	0	***
Household Head Occupation				
armed forces occupations (Reference category)				
Managers	8.776	3.77	0	***
Professionals	9.823	4.04	0	***
technicians and associate professionals	4.032	2.47	.013	**
clerical support workers	4.047	2.47	.013	**
service and sales workers	1.507	0.73	.464	
skilled agricultural, forestry and fishery workers	1.409	0.61	.541	
craft and related trades workers	1.002	0.00	.997	
plant and machine operators, and assemblers	1.034	0.06	.952	
elementary occupations	.68	-0.69	.492	
Constant	.024	-6.62	0	***
Pseudo R-squared	0.286			
Chi-square	3694.277			
Prob > chi2	0.000			
Number of obs.	13240			

\*\*\* p<.01, \*\* p<.05, \* p<.1 Source: Authors' own calculations

Remittances, education of household head and ratio of food to total expenditures are highly significant. The households with a dependency ratio of more than 5 persons are 1.38 times more likely to be highly educated as compared to those rural households where the dependency ratio is less than 5 persons. So overall, in Pakistan, the increased dependency ratio does not cause to reduce the chances of getting higher education at the household level. Similarly, households with more than 1 source of income are 2.17 times more likely to get higher education than households with only 1 source of income. Households that receive remittances are 1.41 times more likely to get higher education as compared to other households that do not receive foreign remittances. The role of the education of the household head is still the highest among all the significant determinants of higher education in the case of Pakistan. Households with head-education more than 5 years are 4.52 times more likely to attain higher education compared to other households with head-education less than 5 years. The small ratio of food to total expenditures also contributes positively to the attainment of higher

Table 10. Socio-economic determinants of higher education in Rural Pakistan (2005-06)

Dummy_Higher Education	Odds Ratio	t-value	p-value	Sig.
dummy_gender_household head (male=1)	1.669	0.85	.394	
dummy_dep_ratio (=1 dep_ratio > 5)	1.288	2.22	.026	**
dummy_income_sources (=1 if income_sources >1)	1.736	4.74	0	***
dummy_remittances (=1 if receives remittances)	.757	-1.10	.271	
dummy_household_head edu (=1 if head edu >5)	7.551	14.32	0	***
dummy_foodx/x (=1 if foodx/x < 0.5)	2.288	7.50	0	***
Household Head Occupation				
Armed forces occupations (Reference category)				
Managers	2.183	0.67	.501	
Professionals	4.222	1.30	.195	
Technicians and associate professionals	1.919	0.59	.556	
Clerical support workers	.994	-0.01	.996	

service and sales workers	.503	-0.62	.536	
skilled agricultural, forestry and fishery workers	.596	-0.47	.64	
craft and related trades workers	.354	-0.91	.364	
Plant and machine operators, and assemblers	.18	-1.48	.139	
Elementary occupations	.261	-1.20	.229	
Constant	.015	-3.79	0	***
Pseudo R-squared	0.293			
Chi-square	1045.527			
Prob > chi2	0.000			
Number of obs.	7739			

\*\*\* p<.01, \*\* p<.05, \* p<.1 Source: Authors' own calculations

Education. Households with ratio value less than 0.5 are 2.73 times more likely to get higher education as compared to households with ratio value of more than 0.5.

In Pakistan, different household head-occupations also play a significant role in determining the attainment of higher education when compared with *Armed Forces occupations*. The households with head-occupation *Managers, Professionals, Technicians and associate professionals* and *Clerical support workers* have significantly different chances of getting higher education as compared to households with head-occupation *Armed forces occupations*. While the chances of getting higher education in households with head-occupation *Plant and machine operators and assemblers, Service and sales workers, Skilled agricultural, forestry and fishery workers, Craft and related trades workers, and Elementary occupations* are not significantly different from the households of reference category *Armed forces occupations*. Households with head-occupation *Managers, Professionals, Technicians and associate professionals* and *Clerical support workers* are respectively 8.78, 9.82, 4.03 and 4.05 times more likely to attain higher education as compared to households with head-occupation *Armed forces occupations*.

Table 10 reports socio-economic determinants of higher education in rural Pakistan (2005-06). Education of the household head at rural level has highest impact on higher education attainment among all determinants of higher education at the rural level. Households where household-head has more than 5 years of schooling are 7.55 times more likely to attain higher education compared to households that have less than 5 years of schooling. Ratio of food expenditures to total expenditures also matter for attainment of higher education at household level. Households with ratio of food expenditures to total expenditures less than 0.5 are 2.29 times more likely to be highly education as compared to households with ratio value greater than 0.5.

In rural Pakistan, all household heads having different categories of occupations are not different from the reference category when compared with *Armed forces occupations*. Table 11 gives the results of socio-economic determinants of higher education in urban Pakistan. The role of gender of the household head, dependency ratio and remittances is insignificant in attaining higher education at the household level. While the role of income sources, education of household head and ratio of food expenditure to total expenditures is highly significant. Households having more than 1 sources of income are 1.62 times more likely to get higher education as compared to households with single source of income. The role of education of household head is again highest among all the significant determinants of higher education in urban Pakistan. Households whose head-education is more than 5 years of schooling are 6.19 times more likely to attain higher education as compared to other households where household head-education is less than 5 years of schooling. The ratio of food to total expenditures also plays significant role in attaining higher education at household level and households with ratio value less than 0.5 are 2.67 time more likely to get higher education than the households with ratio value more than 0.5.

In urban Pakistan, several household head-occupations also play significant role in determining the attainment of higher education when compared with *Armed forces occupations*. The chances of attainment of higher education for households with head-occupation *Managers, Professionals, Technicians and associate professionals, Plant and machine operators and assemblers, and elementary occupations* are significantly different from the chances of getting higher education for households with head-occupation *Armed forces occupations*. Household heads with the category of *Managers, Professionals, and Technicians and associate professionals* are respectively 7.40, 7.41 and 2.68 times more likely to attain higher education as compared to household heads with occupation *Armed forces occupations* while Household heads with *plant and machine operators and assemblers, and elementary occupations* are respectively 0.36 and 0.35 times less likely to attain higher education as compared to household heads

Table 11. Socio-economic determinants of higher education in Urban Pakistan (2005-06)

Dummy_Higher Education	Odds Ratio	t-value	p-value	Sig.
dummy_gender_household head (male=1)	1.282	0.46	.647	
dummy_dep_ratio (=1 dep_ratio > 5)	.961	-0.42	.677	
dummy_income_sources (=1 if income_sources >1)	1.619	5.29	0	***
dummy_remittances (=1 if receives remittances)	1.251	0.96	.336	
dummy_household_head edu (=1 if head edu >5)	6.185	15.65	0	***
dummy_foodx/x (=1 if foodx/x < 0.5)	2.669	8.93	0	***
Household Head Occupation				
Armed forces occupations (Reference category)				
Managers	7.404	3.47	.001	***
Professionals	7.412	3.50	0	***
technicians and associate professionals	2.675	1.74	.081	*
clerical support workers	1.777	1.01	.31	
service and sales workers	.835	-0.32	.746	
skilled agricultural, forestry and fishery workers	.871	-0.24	.814	
Craft and related trades workers	.49	-1.24	.214	
Plant and machine operators, and assemblers	.361	-1.76	.078	*
Elementary occupations	.347	-1.86	.063	*
Constant	.03	-6.10	0	***
Pseudo R-squared	0.318			
Chi-square	1768.371			
Prob > chi2	0.000			
Number of obs.	4976			

\*\*\* p<.01, \*\* p<.05, \* p<.1 Source: Authors' own calculations

With occupation Armed forces occupations. The chances of getting higher education in households with head-occupation Clerical support workers, Service and sales workers, Skilled agricultural, forestry and fishery workers, Craft and related trades workers, and Plant and machine operators and assemblers are not significantly different from the households of reference category Armed forces occupations.

Table 12: Socio-economic determinants of higher education in Overall Pakistan (2005-06)

Dummy_Higher Education	Odds Ratio	t-value	p-value	Sig.
dummy_gender_household head (male=1)	1.424	0.88	.379	
dummy_dep_ratio (=1 dep_ratio > 5)	.963	-0.52	.601	
dummy_income_sources (=1 if income_sources >1)	1.507	5.93	0	***
dummy_remittances (=1 if receives remittances)	.901	-0.62	.535	
dummy_household_head edu (=1 if head edu >5)	7.136	22.08	0	***
dummy_foodx/x (=1 if foodx/x < 0.5)	3.11	15.27	0	***
Household Head Occupation				
Armed forces occupations (Reference category)				
Managers	6.029	3.51	0	***
Professionals	5.341	3.33	.001	***
technicians and associate professionals	2.173	1.55	.12	
clerical support workers	1.481	0.78	.436	
service and sales workers	.729	-0.64	.525	
skilled agricultural, forestry and fishery workers	.51	-1.34	.179	
craft and related trades workers	.451	-1.56	.119	
Plant and machine operators, and assemblers	.3	-2.34	.019	**
Elementary occupations	.297	-2.41	.016	**
Constant	.022	-7.57	0	***
Pseudo R-squared	0.352			
Chi-square	3519.185			
Prob > chi2	0.000			
Number of obs.	12715			

\*\*\* p<.01, \*\* p<.05, \* p<.1 Source: Authors' own calculations

Table 12 details the results of socio-economic determinants of higher education in overall Pakistan. The role of household head gender, dependency ratio and remittances is insignificant in attaining higher education at the household level. While the role of income sources, education of household head and ratio of food to total expenditures is highly significant. The role of education of household head is still highest among all the significant determinants of higher education in case of overall Pakistan. Households with head-education more than 5 years are 7.14 times more likely to attain higher education as compared to other households with head-education less than 5 years. Similarly, households with more than 1 sources of income are 1.51 times more likely to get higher education than the households with only 1 source of income. The small ratio of food to total expenditures also contribute positively in the attainment of higher education. Households with ratio value less than 0.5 are 3.11 times more likely to get higher education as compared to households with ratio value of more than 0.5.

In Pakistan, different household head-occupations also play significant role in determining the attainment of higher education when compared with Armed forces occupations. The households with head-occupation Managers, Professionals, Plant and machine operators, and assemblers and Elementary occupations have significantly different chances of getting higher education as compared to households with head-occupation Armed forces occupations. Households with head-occupation Managers and Professionals are respectively 6.03 and 5.34 times more likely to attain higher education while households with head-occupation Plant and machine operators, and assemblers and Elementary occupations are respectively 0.30 and 0.30 times less likely to attain higher education as compared to households with head-occupation Armed forces occupations.

In contrast, households with head-occupation Service and sales workers, Technicians and associate professionals, Clerical support workers, Skilled agricultural, forestry and fishery workers, Clerical support workers and Craft and related trades workers are less likely to attain higher education as compared to households of reference category Armed forces occupations.

### **SUMMARY, CONCLUSIONS AND POLICY RECOMMENDATIONS**

This study investigated the impact of socioeconomic determinants of higher education in Pakistan. For this purpose, the study used Pakistan Social and Living Standard Measurement (PSLM) data for the years 2005-06, 2010-11 and 2015-16. It was found that main significant socio-economic determinants of education in Pakistan are household head education, household head gender, household size, different household head occupations, number of sources of income, family income, ratio of food expenditure to total expenditures and remittances.

Findings of the study show that during study period, among socio economic determinants, education of household head is most significant determinant of higher education in rural and urban areas of Pakistan. During 2015-16, role of ratio of food expenditures to total expenditures and number of sources of income are also significant determinants in attainment of higher education in rural and urban areas and overall Pakistan. There is significant effect of remittances in rural and urban areas of Pakistan. It was also found that dependency ratio has a significant effect in rural and urban areas of Pakistan.

For 2010-11, in rural and urban and overall Pakistan, there is a significant role of food expenditures, number of sources of income and dependency ratio in attainment of higher education. The role of remittances is significant in Pakistan overall. As regards occupations, in rural and urban areas of Pakistan, there is a significant role of professionals and managers as compared to the reference category. Skilled agricultural, forestry and fishery workers, Service and sales workers, and Plant and machine operators are also important in urban areas of Pakistan.

For 2005-06, in rural and urban areas of Pakistan, there is a significant effect of food expenditures and the number of sources of income on the attainment of higher education in Pakistan. Dependency ratio also has significant effect on the attainment of higher education in rural and urban areas of Pakistan. The role of craft and related trades workers, plant and machine operators and assemblers, and elementary occupations is significant in Pakistan. However, in urban areas of Pakistan, technicians and associate professionals' category is statistically significant as compared to reference category (armed forces).

Comparison of findings drawn from odds ratios estimations of the study period on Rural Urban Level in Pakistan show that education of household head is most significant determinant of higher education in rural areas of Pakistan. On the other hand, the gender of household head has no role towards the attainment of higher education in rural areas of Pakistan in all three periods. Occupation of household head plays a significant role in the attainment of higher education in Rural Pakistan. But technicians and associate professionals, and clerical support workers have no role in attaining higher education in rural Pakistan in all the three periods as odds ratios are statistically

insignificant. The occupation of household head also plays an important role in the attainment of higher education in overall Pakistan.

Based on the findings of the study, it may be concluded that the social factors like household head education, household head gender, household size, different household head occupations (managers, professionals, technicians and associate professionals, clerical support workers, service and sales workers, skilled agricultural forestry and fishery workers, plant and machine operators & assemblers and elementary occupations) play their significant role in attainment of education in Pakistan. Similarly, keeping in view the findings, another conclusion may be that the economic factors like number of sources of income, family income, ratio of food expenditure to total expenditures, and remittances also play their significant role in attainment of education in Pakistan.

Keeping in view the conclusions, present study suggests that literacy rate should be increased in Pakistan so that educated parents can contribute more to higher education of their families. It will ultimately lead to increase human capital in the country. Vocational training and IT related programs should be promoted as they increase the efficiency in almost all professions and have multiplier effects on earnings required to get higher education. Also more employment opportunities and cheaper loan facilities aiming at increasing income sources should be focused so that other social factors given in the results can contribute to the attainment of higher education of Pakistan.

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