



# Using Analysis Regression Models to Identify the Failure Factors of Primary Education

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## Abstract

This study is to identify the failure factors of basic education in rural areas of Sindh, Pakistan. According to the article 25-A of the constitution of Pakistan, it is a primary duty of the state that the educational services must be easily accessible to all children from 5 to 10 years old. The focus on expanding the quality of primary education in Pakistan still remains to further improve. However, the Government of Pakistan claims that the situation of education in the state is improving, but in fact the basic education especially for children in rural areas of Pakistan is still alarming. So therefore, this study interests in that to identify: what are the causes behind the situation of education of Pakistan being failure. For comparative analysis, we collected a primary data from rural areas of Sindh province. We used major statistical methods including logistic and probit regression model. In the findings, we found the hug flaws, mismanagement, and lack of availability and accessibility in the education department of government of Sindh. Specifically, we identified that (a) a large portion of school-going age children is out of school, (b) gender disparity, and (c) lack of availabilities and accessibilities from the Government. To analyze the factors from the above aspects helps to improve the quality of education, accessibility, and availability in the rural areas of Sindh, Pakistan.

**Keywords:** Primary Education; Basic Education; Analysis of Factors; Logistic Regression; Probit Regression; Pakistan.

## 1. Introduction

As stage of Education is an active part in human capital development, it increases the efficiency and proficiency of individuals which produces an ability of human physical strength. Because of this the fact is accomplished of leading the economy in the direction of path of supportable economic growth. Education is considered to be one of the human rights, and the state is accountable to assurance equivalent rights to all the citizens (Lall, 2009). It is the primary

duty of the state to provide a free, compulsory, easily accessible, and quality of education to all children of the country.

Pakistan is positioned at 141st (out of 182 countries) in terms illiteracy in Human Development Index (HDI) (HDR 2009). In order to compare with numerous developing countries, the state of the education sector in Pakistan is not precise inspiring. Although, the Government of Pakistan claims that the condition is going to be better, but the real situation of education especially for children in rural areas of Pakistan is still alarming. The literacy rate in Pakistan for the population aged 10 years and older is at 58%, where male literacy is at 69% and female literacy is at 46%. On the other hand, the rural literacy rates are also lower with male literacy at 63% and female literacy at 35% (GoP, 2012). The current progress of all of the above strategy declarations vibrates, which proves a nonappearance of physical progress on primary education indicators (Nicholas. 2012). Pakistan is far away from achieving the universal primary education access and retention. According to the report (Hussain & Anwar, 2008) titled “The State of Pakistan’s Children Report 2011 for improving the quality of education, it is subsequently behind from legging the universal accessibility. In order to achieve the goal of basic education, the Government of Pakistan has been established several internal organizations targeting to accomplish Universal Primary Education.

The primary education in Pakistan is a deficient in many directions (Hussain & Anwar, 2008). The study is urgent needed that to identify: what are the reasons behind the situation of education in rural areas of Pakistan. Those factors are direct and indirect effecting the basic education of Pakistan. So therefore, the basic aim of this study is to know the reasons of: why a certain portion of school-going age children is out of school. In order to achieve the aforementioned objectives, we measure the education availability and accessibly that are reflected by the possible reasons. To analyze the factors from the above aspects has been confirmed in helping to improve the quality of education, accessibility, and availability in the rural areas of Sindh, Pakistan. This study finds out the evidence of the progress of Sindh province of Pakistan to achieve the EFA (Education for all commitments).

In this research, the primary data is collected from the randomly villages in rural areas of Sindh province of Pakistan. This study finds out: (a) The Government of Pakistan whether provides the facilities to the rural areas or not. (b) The children of rural areas accesses school availability and accessibility or not. Moreover, (c) the performance of education management department is satisfied or not.

## 2. Literature Review

There is vast number of studies have been analyzed the factors for failed basic education of Pakistan. The overall results for the primary education of Pakistan especially in rural areas are going too declined.

It has been found (Khalid & Mukhtar, 2002) that there is lack of educational facilities in the rural areas, and there are higher gender disparities in education. The author in (Khalid & Mukhtar, 2002) mentioned the research (causes of low literacy rate in Pakistan) Author elaborated that the economic reasons are greatly affecting the literacy rate of Pakistan, while Pakistan is a developing country, where 38% people are living below the poverty line. The household income is very deficient and not enough to sustenance completely the basic education of the children. Parents prefer their children to work so that income density could be encountered effortlessly that are also main factors of illiteracy in Pakistan.

In the study (Kamens & McNeely, 2010), the World Bank briefs in the report of 2005 about the growth of Pakistan and the development challenges that the country faces. Authors in (Street, 1997) studies about literacy. In the third section of the paper of (Street, 1997), author identifies high

population growth inadequate schooling, low school enrolments rates, and poverty are few major reasons for the increase in number of illiteracy people around the globe. The study (Survey, 2008) is about world economic world survey in 2006 discussed that Pakistan was downed compared to overall rank to 128 out of 130 according to the overall countries. The gender gap is 112 numbers of 115 that means Pakistan since 2006 is going to bottom of the global line. The authors in (Survey, 2008) also revealed that Pakistan is in the bottom 10 countries according to the quantity of poor girl's education that have not ever been in school but only 5 in 10 countries are probable to reach this goal.

According to the study (Khan, Kazmi, & Latif, 1999), the private school is also main reasons to affect the Government School. Author also mentioned that SMC (School Management Community) is responsible the failure education in Government school management as good management is given fair environment. The analyzed results in Khan, Kazmi, and Latif (1999) reveal that one of the main factors effecting on the rural areas that is the poor families they allocated their economic resource to their boys' education. In the author's second statement, some culture limitation discourages the parents from sending the children especially girls to combine /co-education school. This may be reason that a huge number of children especially girls are out of school. Author in Khan, Kazmi, and Latif (1999) defines that the Pakistan's socio-economic condition is very measurable in rural areas. Allocation of insufficient finance and resources is the one of the countless problems in cumulative enrolment rate in Pakistan (Ul Haq & Haq, 1998).

Allocation of low education budget is additional factor to deprive children mostly girls in rural areas of Pakistan (Ferrer-Balas et al., 2010). Ziaullah (2011) mentioned the failure factors in different categories but the presence of availability and accessibility of education is not considered in the analysis report. Ahmed, Taj, Shaikh, and Ali (2011) addresses that many international valuations could explore that Pakistan is lagging behind several countries in accomplishing the Education for All (EFA).

From the thoroughly discussion of the literature review, we found that the researchers explored so many problems behind the target that is Pakistan not going to complete education's goal due to economic causes, poverty, Gender difference, inequality, and population all of the lack of facilities in the rural areas of Pakistan. A number of research studies conducted on compilation of statistics to the population growth suggested that Pakistan faces challenges of having one of the high numbers of out of school children. Now it is needed to identify that what are reason that Pakistan going down in education with compare to the other developing country.

This research inspired from (Chaudhry, 2009). Author defined that Pakistan's basic education is affected by poverty in rural areas of Pakistan and low income of householder. Author found out the research problem by calculated the logit and probit regression and used the primary data. Author used the variables that the X and Y variables are the categorical and continue variables. The dependent variable is used for the householder is a poor or not. Finally, the finding is shown that poverty is affected on the householder. In contrast, the author did not take a parent's decision for their children whether children go to school or not.

## 2.1 Research Gap

We collectively analyze the Availability and Accessibility. Both are not considered previously. Both help in improving quality of education of the rural areas of Sindh Pakistan. Therefore, we are also going to analyze current situation of the education in rural areas of Pakistan. In contrast to related work, we comprehensively and collectively measure and analyze the availability and accessibility of the education, which has not been considered in the previous work except few constraints separately are analyzed. So therefor, our study is to analyze the two dimensions (i.e., availability and

accessibility) that help to improve the quality of education. On other extreme that we analyze the status of school which is prime factor for children (i.e., girls) not going to school due to co-education nature in the school, but in previously it not considered. Furthermore, we used two major statistical models (i.e., logit and probit regression) for analysis the primary data to find the main reason of failure education of Sindh, while previous simply analyze the primary data.

### 3. Methodology

#### 3.1. Dataset

The study uses primary data of the three districts of Sindh province of Pakistan. (25th February to 3th March 2014). The survey is conducted from the householders of the several villages of the districts. In the analysis for examining the data, a primary data is consisted of a total (n= 220) and their questionnaires are comprised in the three sections: (a) householder survey (b) availability, and (c) accessibility. The questionnaire was semi-structured having combination of the closed-ended and open-ended questions. The entire questionnaire was completed with the head of householder. When we interpreted the primary data, we measured that how much government provided the availabilities in education for the children in rural areas, and on the second, the householder is approaching the how much access from the government for their children's education.

The Primary data has been collected through the targeted communities. Random sample selection of respondents is selected from rural and semi-rural areas with a greater focus on girl's children. The districts of Sindh from which we collected data are: Hyderabad, Hala, and Matayari. We visited a total 14 villages of the districts, and a total 16 government school was available in the villages. A complete description of the dataset is described in Table 1.

**Table: 1 complete description of Dataset**

Village No.	School No.	Total	%
1	School-I	20	9.1
2	School-I	14	6.4
	School-II	6	2.7
3	School-I	10	4.5
4	School-I	8	3.6
	School-II	10	4.5
	School-III	2	0.9
5	School-I	20	9.1
6	School-I	20	9.1
7	School-I	20	9.1
8	School-I	10	4.5
9	School-I	20	9.1
10	School-I	20	9.1
11	School-I	20	9.1
12	School-I	20	9.1
<b>Total</b>	<b>16</b>	<b>220</b>	<b>100</b>

### 3.2. Regression Models

In our experiment for regression analyzing, we have used two models: logistic/logit regression and probit regression. The complete information of both models is described as follows with an appropriate example.

#### 3.2.1. Logistic Regression (Logit)

Logistic regression, also called a logit model, is used to model dichotomous outcome variables (Peng, Chao-Ying Joanne, and Tak-Shing Harry So. 2002). In the logit model the log odds of the outcome is model as a linear combination of the predictor variables. Logit module is introduced by Joseph Berkson. Logistic regression has been gaining popular among the social science research. Logit estimation is the conditional probability of a positive outcome given a single positive outcome within group, where  $X_1, X_2, X_3, \dots, X_n$  are the predictor variables, respectively and  $p$  denoted the probability that the dependent variable. Simple logistic model has form:

$$\text{Logit}(Y) = \text{natural log(odds)} = \ln\left(\frac{p_i}{1-p_i}\right) = \alpha + \beta X \quad (1)$$

where  $p_i$  is the probability of the outcome of interest or “event,”  $\alpha$  is the Y intercept, and  $\beta$  is the regression coefficient.  $X$  can be categorical or continuous, but  $Y$  is always categorical. According to Equation 1, the relationship between logit ( $Y$ ) and  $X$  is linear.

In example, one of the dependent variables is a decision, which holds dichotomous values coded 1 if the parent’s decision for child going to school, otherwise parents’ decision coded 0 for child not going to school. An independent variable which effecting to the parent’ decision are stored as continues data i.e., income of the family member and total family members in the house. According to the study (Achia et al., 2010),  $\beta_1, \beta_2, \beta_3, \dots, \beta_n$  are the predictor variables, respectively and  $p$  denoted the probability that the dependent variable.

$$ECE = \begin{cases} 1 & \text{decision housholder} \\ 0 & \end{cases}$$

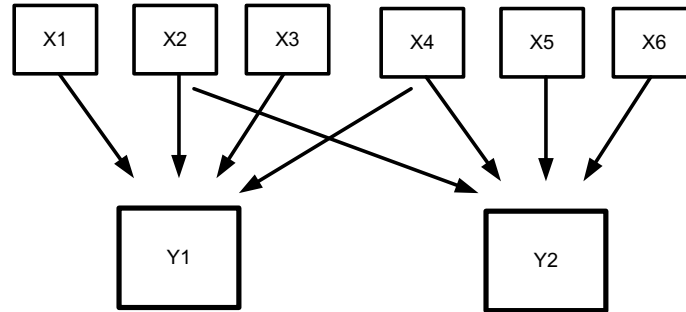
where ECE is the Education Children Effectuated

$Y = \text{Decision}$

$X = \beta_0 + \beta_1 * \text{total\_members} + \beta_2 * \text{inc\_3K\_blw} + \beta_3 * \text{inc\_5k\_10k}$

$\text{Log}(p/1-p) = \beta_0 + \beta_1 * \text{total\_members} + \beta_2 * \text{inc\_3K\_blw} + \beta_3 * \text{inc\_5k\_10k}$ .

where  $p$  is the probability of being in honors composition, expressed in terms of the variables used in this example. The independent variables of the one dependent variable can effect to second dependent variable as shown in the Fig. 1.



**Figure 1:** An overview of dependent and independent variables in logistic model.

### 3.2.2 Probit Regression

Similar to logistic regression, in statistics, the probit model is a type of regression where the dependent variable can only take two values, for example binary of Children are going to school or not. The purpose of the model is to estimate the probability that an observation with particular characteristics will fall into a specific one of the categories. The probit model is a type of binary classification model. The probit model is a popular specification for an ordinal or a binary response model. The probit model, which employs a probit link function, is most often estimated using the standard maximum likelihood procedure, such an estimation being called a probit.

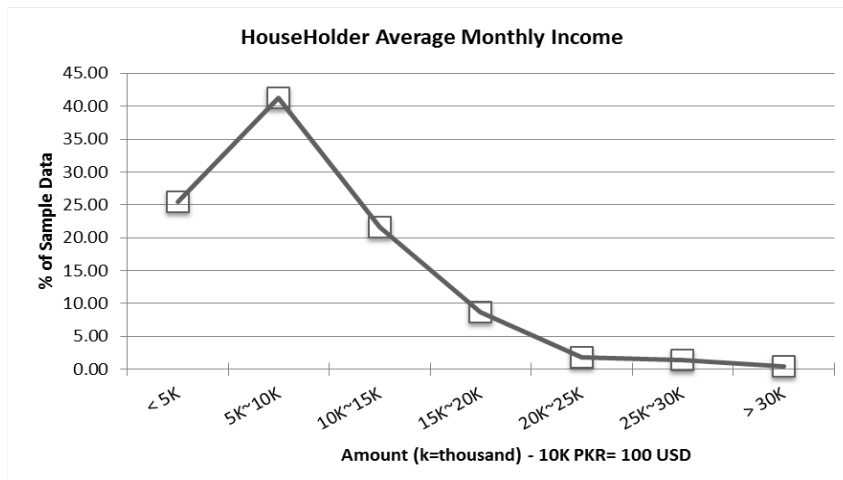
## 4. Results

### 4.1. Analysis of Primary Data

In this section, we analyze the primary data from three major aspects, i.e., householder survey, availability, and accessibility. The major findings of the primary data from three aspects are presented as below.

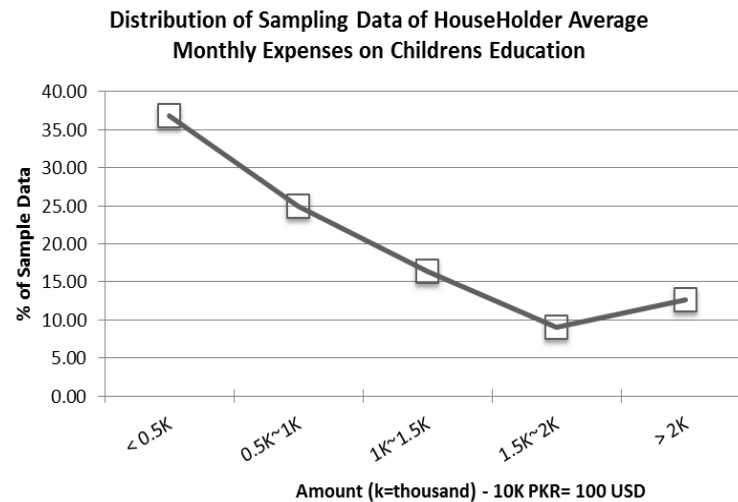
#### 4.1.1. Householder Survey (Socio-economic)

The first part of our data collection is the householder's section; we call that socio-economic. The first results reveal that most of the community members/ respondents were reported in poor category. As our data collection is collected from villages, we found that major sources of income of the people in the target areas were reported as agriculture (farmer), labor, livestock, small shops, and jobs. The average monthly income of the householder was reported as Rs. 9000/- for an average household family. The Householders average monthly income, and their graph is depicted in Fig. 2. The graph clearly shows that the percentage about 25% of total sample data for householder's incomes is less than 5000 PKR, and the percentage about 41.28% of total sample data for householder's incomes is 5 to 10 thousand.



**Figure: 2.** Distribution of Householder average monthly incomes

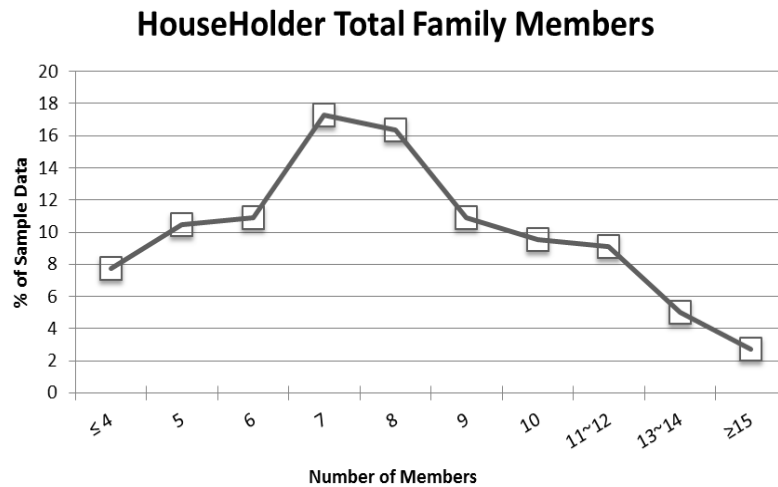
Our second analysis is about parent expenses on the children's education. Fig. 3 shows a distribution of householder's average monthly expenses on children's education. The results reveal that the percentage about 36.8% of sampling data for householder spent within 500 PKR and the percentage about 25% of sampling data for householder spent between 500 to 1000 PKR expenses on their children's education.



**Figure: 3.** Distribution of Householder average monthly expenses on children's education

From the Fig. 4, we can see the distribution of total family members in the house. The average of total family member in the house is about 8.08. From the results we found that the percentage about 7.73% of sampling data for total family members is within 4 family numbers. We found that in our villages most of the families are living as joint family. This shows that among poor strata of society larger family size is very common the trend is repeated in almost every other district.

#### 4.1.2. Availability Survey



**Figure: 4.** Distribution of total family members in the house

After analysis of the first section of the questionnaire, we explore the information of availability of education provided by Government. Our first insight is to know the availability of the Government school in the targeted areas. Table 2. shows that the percentage about 94% of sampling data responded that Government school is available in the village

**Table: 2.** Distribution of response for availability of School

Is Govt. School Available?		
Response	Number	%
Yes	207	94.09
No	13	5.91
Total Sampling	220	100

Next, we want to know about the status of the school, which can be major factor for Girl's education. Because of that most of the families only want to send girls children to the separate school. From the Table 3, we found that only 6.81% percentage of the sample data found as for girls' school in the villages. While for boys and combined school are reported in majority such as 50.9% and 42.2%, respectively. This shows a greater gender disparity for the provision of educational facilities for boys and girls students.

**Table: 3** Distribution of School Status

School Status	Total	%
Girls	15	6.82
Boys	112	50.91
Combine	93	42.27
Total	220	100

After analyzing the status of school, we need to know the amenities such as electricity and drinking water in the school facilitated by Government. The Table 4 and 5 show the response of the householder in the villages for electricity and drinking water, respectively. The table for response of drinking water shows that the percentage about 50% of sampling data responded that water is available in the school and the percentage about 49% of sampling data responded that school don't have arrangements for drinking water. Similarly, the table for response of electricity also degrading the Government deficiency, such as, it shows that 82% schools have no electricity.

**Table: 4. Distribution of response for electricity**

Response	Total	%
No	182	82.73
Yes	38	17.27
Total	220	100

**Table: 5. Distribution of response for drinking water**

Response	Total	%
No	112	50.91
Yes	108	49.09
Total	220	100

#### 4.1.3 Accessibility Survey

In last section of the questioner, we analyze the information of accessibility of education in the villages. In the first, we want to see the accessibility for free text book. The Table 6 for response of free text book shows that the percentage about 51% of the sampling data for householder is getting free text book for their children's education. On the other hand, the percentage about 45% is not getting free text books from the Government, which is unaffordable for their parents because their income does not allow to expanse on the book for their children. Although the Government always claims that they provide the text books to rural areas, but big question is still alarming that why the children do not access the text books from their school. Because of this it is cleared that there is corruption in education in the low level of department (i.e., school management committee-SMC), which is not making fair performance.

**Table: 6. Distribution of response for free text book**

Response	Total	%
No	113	51.36
Yes	107	48.64
Total	220	100

The SMC always play a pivotal role in the accessibility of the education in the villages. So we also analyze the ratio of response for SMC as shown in Table 7. We found that the percentage about 78.1% of sample data responded that SMC has been established in the school of the villages. Because of this result, we can observe that highly corruption is available in the low level such as in SMC, which does not work properly.

**Table: 7. Distribution of response for presence of school management committee (SMC)**

Response	Total	%
No	48	21.82
Yes	172	78.18
Total	220	100

On the next, we also explore the involvement of the teachers in school. We found that most of the teachers are belonged to different village. In other words, teachers are not local, as shown in the Table 8. We also found that most of the teachers are frequently absents in the school. The Table 9. shows that the percentage about 70% of sample data responded that teachers are frequently absent from their duty.

**Table: 8. Distribution of response for Teacher's locality**

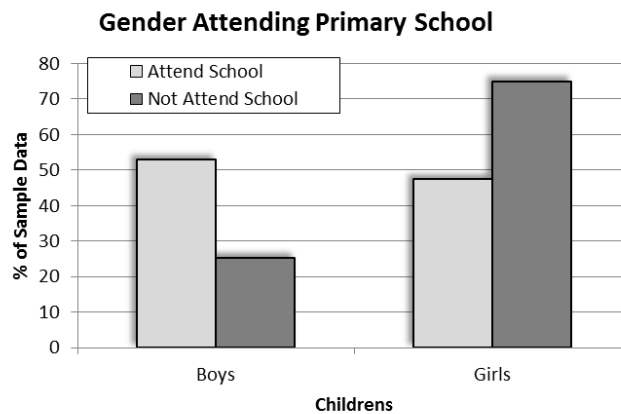
Response	Total	%
No	118	53.64
Yes	102	46.36
Total	220	100

**Table: 9. Distribution of response for Teacher's absentness**

Response	Total	%
No	66	30
Yes	154	70
Total	220	100

#### 4.1.4. Literacy Survey

In this section, we explore the literacy ratio of the house in the targeted villages. In the first, we found the total number of children in house, as shown in the Table 10. The table shows the percentage of children in and out of the school. The data reveals that a large number of children are out of schools. Furthermore, we also analyze the distribution of the response for children going to school in gender-wise. We found that majority of girls are not going to school as shown in Fig. 5.

**Figure: 5. Distribution of children going to school in gender-wise**

The major reasons for children being out of school may be their parents were like being too senior or overage, poverty, school dysfunctional, early marriages of girls, disability, and lack of interest of parents. The female teacher availability issue is also more dominate factor for the girls being out of school, which has never been addressed by the Government. As a matter of fact despite the policy shift female school teachers still remained to be out numbered against their male counter parts, it simply means that a significant portion of girl students will continue to remain out of school.

**Table: 10. Distribution of children going to School**

	Total Children	Attend School	%	Not Attend School	%
Boys	218	115	52.75	103	47.25
Girls	147	37	25.17	110	74.83
All Children	365	152	41.64	213	58.36

From the above results for the literacy, we have measured the literacy and their factors by the following equation.

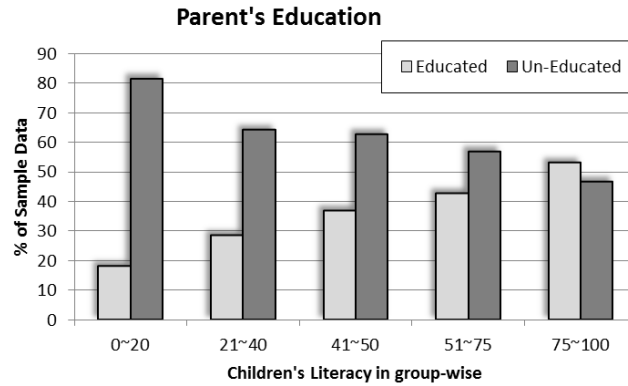
$$LP = \frac{CS}{CH} \times 100\% , \quad (1)$$

LP= literacy percentage where CS represents a total child going to school and CH represents the total children in home. This equation gives result for each home then we categorize the literacy ratio into five categories from the entire sampling dataset. The categories are shown in Table 11.

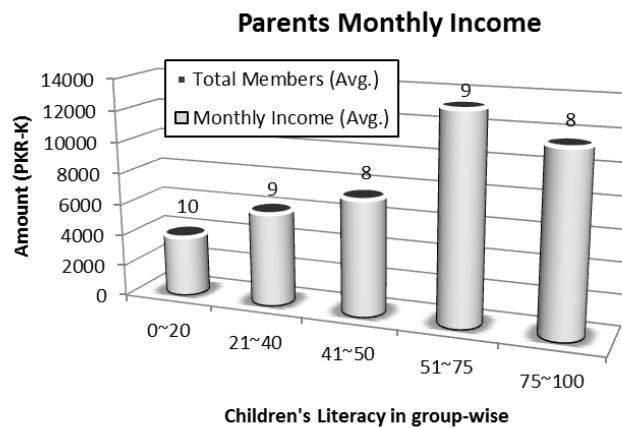
**Table: 11. Distribution of literacy ratio for entire dataset**

Literacy Percentage Distributions		
Rank	Sample	%
0~20	23	12.71
21~40	14	7.73
41~50	29	16.02
51~75	14	7.73
75~100	101	55.80
Total	181	100

The factors we consider in this section which effect on literacy ratio are: parent's education, amenities such as drinking water and electricity, average monthly income of the parents, and total number of family members. Fig. 6, 7, 8, and 9 shows the literacy ratio's affected by parent's education, parent's average monthly income, drinking water, and electricity in the school, respectively.



**Figure: 6.** Distribution of parent's education with respect to literacy ratio

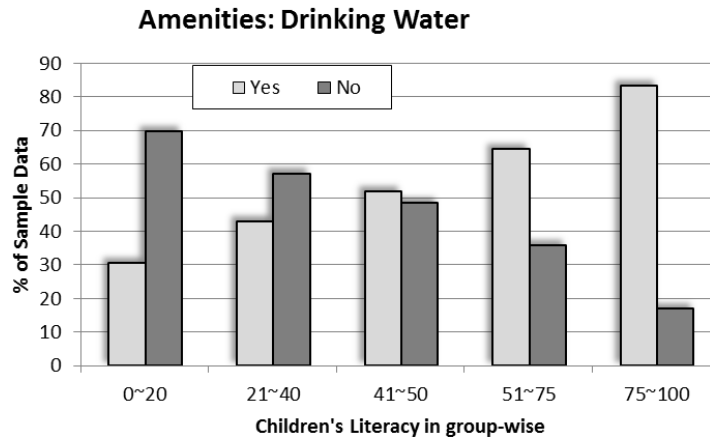


**Figure: 7.** Distribution of parent's average monthly income with respect to literacy ratio

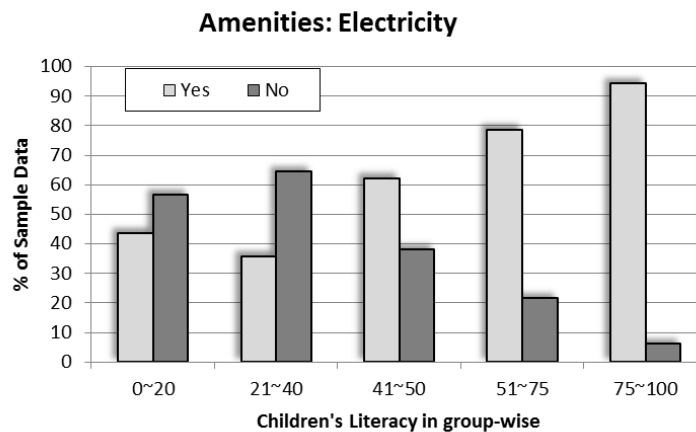
These graphs divided into the above five groups of percentage shown in Fig. 6. We found that the literacy ratio of the home is significantly affected by the aforementioned factors. More precisely, the figure shows effect of parent's education on their home literacy ratio is reduced when the parents are un-educated. Similarly, the parent's average monthly income also effects on their literacy ratio, specifically when the total number of family members accessed together low income always degraded the literacy ratio. We also found the amenities including drinking water and electricity pretty effect on their literacy ratio as shown the Fig. 8 and 9, respectively.

#### 4.2. Models' Results

In this section, we describe our all experiments which are customized on the models. After running the regression models more than 100 times, we have chosen five model experiments comprised on five different dependent variables which are influenced by various independent variables. A complete list of the experiments with their dependent/independent variables are shown in Fig. 10.



**Figure: 8.** Distribution of drinking water in the school with respect to literacy ratio



**Figure: 9.** Distribution of electricity in the school with respect to literacy ratio

Each experiment used a different observation size of total sampling data. From total sampling size ( $n=220$ ), the observation size for each experiment are as follows. The availability and accessibility are measured in the Experiment 1 and Experiment 2, used 181 observations, respectively. Both experiments measured from those householders which are sending their children to school. The Experiment 3 is for measuring the parent's decision for sending the children to school, used 181 observations. Because the primary education is a compulsory for children 5 to 10 years old, we only focused those householders which have the children in house under the aforementioned age. We also measure the parent's decision for sending the children to school in gender-wise such as Experiment 4 for boys and Experiment 5 for girls, used 109 and 148 observations, respectively. The results of all of the experiments are shown in Table 12, 13, 14, 15, 16, and 17, respectively.

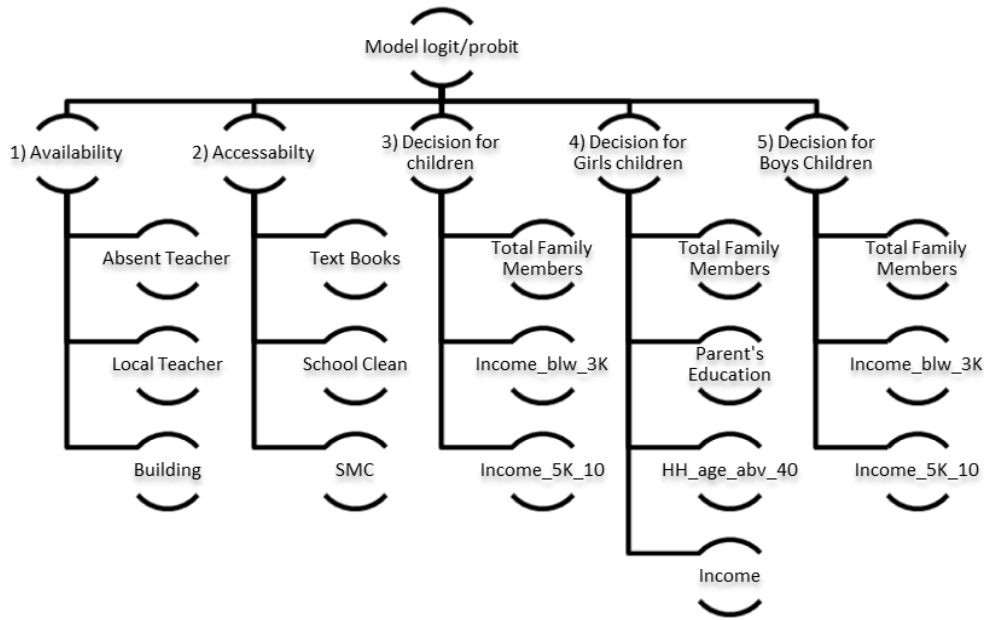


Figure: 10. Distribution of literacy ratio for entire dataset

Although, we have surveyed sampling data from the householder, on which the questionnaire is in binary response from the householders. In the research, we replaced few variables by using dummy variables for running the regression. These estimates tell about the relationship between the independent variables and the dependent variable, where the dependent variable is on the logit scale. These estimates tell the amount of increase in the predicted log odds of independent variables = 1 that would be predicted by a 1 unit increase in the predictor, holding all other predictors constant.

There are five dependent Variables and seventeen are independent variables

(1)  $\text{Log} (p/1-p) Y = \beta_0 + \beta_1 * \text{absent\_teacher} + \beta_2 * \text{local\_teacher} + \beta_3 * \text{Electirc} + \beta_4 * \text{building}$ .

Table: 12. Model result for Experiment 1.

		Logit				Probit			
		Independent variable				Independent variable			
Dependent variable		absent_teacher	local_teacher	Electirc	buildin g	absent_teacher	local_t eacher	Electirc	buildi ng
Ava ilabi lity	Coef:	-3.189	2.016	-.1350	1.680	-1.712	1.159	-.0350	.9297
	P value:	0.000	0.000	0.045	0.028	0.000	0.000	0.033	0.028
	St.Err	.7749	.5629 1	1.104	.7631	.3787	.3174	1.104	.422 9
	Z	-4.12	3.58	-0.12	2.20	-4.52	3.65	-0.03	2.19
	Odd ratio	0.041	7.508	0.873	5.366				

$$(2) \text{Log} (p/1-p) = \text{Accessibility} = \beta_0 + \beta_1 * \text{text\_books} + \beta_2 * \text{school\_clean} + \beta_3 * \text{smc}$$

**Table: 13. Model result for Experiment 2.**

Dependent variable		Logit			Probit		
		Independent variable			Independent variable		
		text_boo ks	school_cle an	smc	text_boo ks	school_cle an	smc
Acc essib ility	Coef:	2.664	-1.60769	-4.0445	1.534	-.9271	- 3.087 2
	P value:	0.000	0.018	0.037	0.000	0.015	0.043
	St.Err	.5800	.38108	.3688 6	.31387	.38108	.3688
	z	4.59	-2.36	-6.11	4.89	-2.43	-8.36
Odd ratio		14.368	0.093	0.901			

$$(3) \text{Log} (p/1-p) \text{ Decision\_total} = \beta_0 + \beta_1 * \text{total\_members} + \beta_2 * \text{inc\_blw\_3K} + \beta_3 * \text{inc\_5K\_10K}$$

**Table: 14. Model result for Experiment 3.**

Dependent variable		Logit			Probit		
		Independent variable			Independent variable		
		total_mem bers	inc_blw_ 3K	inc_5K_1 0K	total_memb ers	inc_blw_ 3K	inc_5K_10 K
Decis ion _total	Coef:	-.6067	-5.846	2.389	-.3539	-4.846	1.372
	P value:	0.000	0.000	0.018	0.000	0.000	0.001
	St.Err	.11228	.9843	1.4422	.0611	.8743	.7592
	Z	-5.40	-5.94	1.66	-5.79	-5.54	1.81
Odd ratio		0.545	0.003	10.913			

$$(4) \text{Log} (p/1-p) = \text{Decision\_b} = \beta_0 + \beta_1 * \text{total\_members} + \beta_2 * \text{inc\_3K\_blw} + \beta_3 * \text{inc\_5k\_10k}$$

**Table: 15. Model result for Experiment 4.**

Dependent variable		Logit			Probit		
		Independent variable			Independent variable		
		total_mem bers	inc_blw_ 3K	inc_5K_ 10K	total_mem bers	inc_blw_3 K	inc_5K_1 0K
Decis ion _b	Coef:	-.7139	-5.846	4.472	-.40557	-3.276	2.350
	P value:	0.000	0.000	0.020	0.000	0.000	0.014
	St.Err	.15006	.98434	1.9202	.07917	.48597	.9578
	z	-4.76	-5.94	2.33	-5.12	-6.74	2.45
oddrati o		0.490	0.003	87.532			

(5)  $\text{Log}(p/1-p) = \text{Decision\_g} = \beta_0 + \beta_1 * \text{total\_members} + \beta_2 * \text{parents\_edu} + \beta_3 * \text{hh\_head\_age\_abv40} + \beta_4 * \text{school\_status\_mix} + \beta_5 * \text{income}$ .

**Table: 16. Model result for Experiment 5 (logit).**

		Logit				
		Independent variable				
Dependent variable		total_members	parents_edu	hh_head_age_abv40	school_status_mix	income
Decision_g	Coef:	-1.212	6.2356	-2.439	-4.439	.0007
	P value:	0.005	0.001	0.050	0.040	0.003
	St.Err	.43089	1.9136	1.7581	.96313	.000245
	z	-2.81	3.26	-1.96	-5.82	2.94
	oddratio	0.298	510.81	0.087	0.032	1.001

**Table: 17. Model result for Experiment 5 (probit).**

		Probit				
		Independent variable				
Dependent variable		total_members	parents_edu	hh_head_age_abv40	school_status_mix	income
Decision_g	Coef:	-.6662	3.520	-1.9290	-5.339	.00039
	P value:	0.004	0.001	0.050	0.040	0.001
	St.Err	.22874	1.0719	.98329	.9631	.00012
	z	-2.91	3.28	-1.96	-5.54	3.24

## 5. Discussions

In order to conclude the above findings, we recall our major highlights in this section. Firstly, we will discuss all about the survey such as socio-economic, accessibility, and availability and then thoroughly describe the results taken in the models.

We analyzed the information of the householder survey. (1) Here, we found that the average monthly income of the householder was reported as 9000 PKR for an average householder's family size of 8.1. (2) The findings clearly shows that the percentage about 25% of total sample data for householder's incomes is less than 5000 PKR, and the percentage about 41.28% of total sample data for householder's incomes is 5 to 10 thousand. (3) The average of total family members in the house is about 8.08. From the results, we found that the percentage about 7.73% of sampling data for total family members is within 4 family numbers. From this, we found that in the villages most of the families are living as joint family. (4) While for parent's expenses of children education, the results reveal that the percentage about 36.8% of sampling data for householder spent within 500 PKR and the percentage about 25% of sampling data for householder spent between 500 to 1000 PKR expenses on their children's education.

(5) On the extreme that the results for availability show that the percentage about 94% of sampling data responded that Government school is available in the villages. (6) Because of that most of the families only want to send girl children to the separate school. The result reveals that only

6.81% percentage of the sample data found as for girls school in the villages. There was a very short number for separate girls' school in the visited villages. (7) The results for amenities show that the response of electricity is degrading the Government deficiency, such as; it showed that the percentage about 82% schools have no electricity. (8) The percentage about 45% is not getting free text books from the Government.

(9) We also found that most of the teachers are not local teachers. (10) The results reveal that most of the teachers are frequently absents in the school. The result shows that the percentage about 70% of sample data responded that teachers are frequently absent from their duty. (11) The data reveals that a large number of children (such as 58.36%) are out of schools. We found that majority of girls (such as 74.83%) are not going to school.

(12) Further, we found that the literacy ratio of the home is significantly affected by the factors including parent's low monthly income, a large number of family members, un-educated parents, and amenities such as no-drinking water and no-electricity

### 5.1 Regression Model Results

The regression model's results indicated that the predictor variables are significantly explained that low availability and accessibility of education and decision of householder for children going to school or not. Low income of householder, large family size, mix school, and age of household above the 40, these all are affecting the children's education. Although that these all factors are affecting to the children's education but gender disparity in education is also shown in the model which is significantly affecting especially girl education. Low availability and accessibility are affected by the independent variables. Overall model is indicated that the result is significant and coefficients are significant at the 95% and odd ratio is more than 1, which confirms the positive relation with the probability of dependent variables. Odd ratio of more than 1 confirms the positive relation with the probability of yes dependent variables.

### 6. Conclusions

The Education department is far away from achieving the universal primary education in Sindh Province. The analysis of primary and interruption the model shows that there are huge flaws in the management of education services in the Sindh province. The overall situation of education in the province is alarming. There is large number of children, especially in the rural areas, who are out of schools. There is greater gender disparity in education at all levels. The proper and efficient monitoring and supervision is almost absent and there is lack of proper physical infrastructure and basic facilities in schools. Lack of local teachers, deficiency of proper teaching materials, and poor physical infrastructure of schools indicate the poor performance of this sector. In our future direction, we intend to work on more dimensions such as Accountability and Adaptability. The flaws of miss management found in our work are a country specific construct. To cover the limitations of our research, more sample size is needed to fit a good model.

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