Public Participation in School Management as a Catalytic agent for the Enhancement of Education Quality

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Abstract

The right to education is not only indicating the right to access to education but also emphasizing the right to quality education. To improve the quality of education, World Bank and other donor agencies introduced the need of community involvement in school management system in achieving the right to education. Thus, multiple reform programs initiated based on community involvement known as school-Based Management (SBM) or School Management Committee (SMC). Given this, to improve the quality education, many countries initiated multiple reform programs and indicated the need of community involvement through community-school partnership. Therefore, in Pakistan, like other provinces, Sindh also formed School Management Committee (SMC). This study is an attempt to evaluate the impact of community involvement on quality of education in Sindh province of Pakistan. For the analysis, the study has used Sindh Education Management Information System (SEMIS) database. To evaluate the impact of SMC intervention, the study has constructed different measures of quality education such as school environment index, teacher's resource index, promotion rate, repetition rate, and dropout rate. Further, the study has also assessed the quality of matching based on different measures of matching quality. Since the study has selected those schools of Sindh in which SMC is functional. Hence, to control the problem of self-selection bias, the study has used a semi-parametric propensity score matching technique (PSM). The overall findings of the study provide useful insights and reveal that the establishment of SMC has positive and significant impact on access to school and quality of school measures except the one i.e., student's dropout rate. The study recommends that an impact evaluation is one of the best ways to provide evidence-based useful insights for the policymakers to improve educational outcomes for future generations.

Keywords: *Quality of Education; Impact Evaluation, program Evaluation; Propensity score matching; Average Treatment Effect*

Introduction

According to UNESCO (2003), the primary source to assess the quality education is to focus the student's learning outcomes but the desired quality can be achieved if the input, process, and output ensure the quality in terms of efficiency, effectiveness and excellence and social justice. Nonetheless, it does not only impact the learner's cognitive development but also ensures a successful and productive future to our future generation. In Pakistan, one of the key performance social indicators particularly, education, remained a challenge since its independence in 1947. The right to education is not only indicating the right to access to education but also emphasizing the right to quality education. The access to good quality education is entailed for the development of societies as a whole. Generally, the quality of education is assessed on the basis of key performance indicators such as increase in student's class enrolment, number of qualified teachers and number of institutes in a country. To improve the quality of education, World Bank and other donor agencies introduced the need of community involvement in school management system. Thus, multiple reform programs initiated based on community involvement known as school-Based Management (SBM) or School Management Committee (SMC). Therefore, in Pakistan, like other provinces, Sindh has also formed SMC in 1990. SMC was formed to control all aspects of school management such as students' enrolment, teachers' attendance, classroom teaching, school finance and outcome of the student. However, according to SEMIS 2013-14, SMC is functional in around 82 percent of the public schools in Sindh. The Sindh Education Foundation (SEF) initiated a number of reform programs based on school interventions, particularly in remote areas of Sindh. In this context, the government of Sindh introduced a sector reform program for primary as well as secondary education known as the Sindh Education Sector Reform Program (SERP). Additionally, this program was financially supported by the World Bank during the Fiscal Year 2006/07 to 2011/12. The Second Sindh Education Sector Reform Program (SERP-II) was arrived to improve the quality-of-service delivery and to increase the student's participation in schools. But the deteriorating condition and current decline in the enrolment is alarming and it needs an in-depth assessment. Thus, there is a need to evaluate an in-depth assessment of such interventions/programs on the overall quality of education so, this study aims to assess the impact of School Management Committee (SMC) on quality education in Sindh.

Objectives

Unfortunately, in Pakistan, education remained one of the deprived fields and it has been facing serious challenges in the areas of access, quality, and governance. However, since its

inception, the government of Pakistan took various initiatives for building concrete educational foundation of the country and proposed considerable attention to the betterment of the educational outcomes. Additionally, education is one of the most powerful and supported factors for achieving the sustainable development in a country. Thus, Pakistan, like other developing countries of the world also signed the 17 Sustainable Development Goals (SDGs) agenda 2030This study is an attempt to assess the impact of one of the SERP programs that is School Management Committee (SMC). The objectives of the study are twofold. In the first step, to evaluate the impact of SMC intervention, the study has constructed different measures of quality education such as school environment index, teacher's resource index (measures of access to school), promotion rate, repetition rate and dropout rate (measures of quality of education). However, in the second step, the study evaluated the ex-post treatment effect of SMC on quality education measures using a semi-parametric propensity score matching technique (Jimenez & Sawada, 1998; Sawada, 1999; and Sawada & Ragatz, 2005).

Literature Review

Improvement in educational governance ensures the improved levels of access, quality and participation in education which ultimately reduces various problems related to service delivery (UNESCO, 2009). This indicates the need and the interest of community involvement in education for better planning and management which can help to increase the demand for education and improve the quality of education by improving the enrolment, attainment, and achievement of the students (Watt, 200l). Additionally, studies conducted in Latin America, North America, Sub-Saharan Africa, and Southeast Asia found positive impact of community-school involvement on outcomes for students, schools and community (DeSteffano et al., 2006; Vagas, 2005; Henderson & Mapp, 2002; Watt, 2001; Mozumder & Halim, 2006). Further, Bray (2001) observed that community participation increased community interest in education and also increased equity in access to education. Finally, in almost all the studies reported three stakeholders in school-based mechanism such as school, parents and community members and the most common term used in the literature is School Management Committee (SMC).

A number of related studies conducted to examine the impact of SMC in improving the quality education such as Asim (2013) evaluated the trends in education system of public schools in Sindh province for the periods of 2004-05 and 2011-12 using descriptive analysis. Further to this, the study also validated the statistics by robustness checks based on household-school level census collected independently in three districts of rural Sindh

namely Mirpurkhas, Matiari, and Sanghar. However, Kumar (2016) studied the role and functioning of SMC in public schools in district Kullu of Himachal Pradesh. The study found that SMC has positively improved the quality education. Similarly, another study conducted by Rout (2015) to assess the role of SMC in rural elementary schools in Balasore district of India and revealed that SMC has successfully achieved universal enrolment by proper monitoring pupil's attendance and absenteeism and also efficiently developed school infrastructure. Further, the study revealed that the SMC allocated funds has also been utilized properly. Osei-Owusu and Sam (2012) analysed the role of SMC to improve the quality education and teaching in Ashanti Mampong Municipal Township Basic schools in Ghana-West Africa, based on simple random sampling. However, the study found SMC ineffective to monitor the headteachers, teachers, and student's attendance but found very effective for developing better school-community relationship. This study contributes to the existing literature by empirically assessing the impact of SMC on quality education in Sindh.

In Sindh, a number of reform programs introduced under SERP-II for instance, community-based committee is formed called School Management Committee (SMC) which is one of the core factors of the SERP-II reform program agenda. Further to this, the need of community involvement is also indicated in the minimum standards for quality education in Pakistan, developed by the interprovincial technical working groups (IPTWGs) on quality and governance of education. However, SMC is a triangular committee consisting of its three members namely school, parents and local community. SMC is formed to provide a support to the headteachers in order to deliver quality education without any delay to the children, the monitoring of teacher's attendance and performance in the classroom. Finally, SMC is also formed to improve the student's performance by increasing the student's enrolment and reducing the dropout from the school. To improve the quality education, multiple reform programs have been initiated by the Govt. of Sindh mainly under the umbrella of SERP. However, the impact assessment studies, for evaluating the quality education, are very limited in number.

Model and Methodology

The proposed model is based on different outcome variables and also providing the detailed construction of each variable used in the model.

Model Specification and Source of Data

To evaluate the impact of SMC intervention on different aspects of quality education, such quality indicators are the outcome variables that are discussed in detail in the following econometric models. The model, given in equation 1, is basically discussing the general

model which is consisting of the outcome of interest, treatment variable and different covariates used in the analysis.

$$Yi = \beta 0 + \beta 1Ti + \beta 2\neg Vi + \beta 3Wi + \beta 4Zi + \in \quad \text{..... (1)}$$

- Yi is the outcome of variable for school i (i.e., Quality and Access indices),
- T is the treatment variable for whether the school received the intervention or not. This is binary in nature,
- Vi is the student's enrolment-based indices such as student's flow rates
- Wi is the teachers' characteristics on average by school i. Such as gender of the teacher, teacher's qualification, type of training acquired their designation, etc.
- Zi denotes the school characteristics including number of classrooms in the school, building condition, availability of washroom, drinking water facility, electricity facility, etc.

Here, in the following models, each outcome variable and covariates are discussed in detail.

$$Yi = \beta 0 + \beta 1Ti + \beta 2\neg Vi + \beta 3\ Zi + \in \quad \text{..... (2)}$$

$$Yi = \beta 0 + \beta 1Ti + \beta 2\neg Vi + \beta 3\neg Wi + \in \text{ ..... (3)}$$

In equation 2, the outcome of interest is teacher's resource index, a quality measure of access to school. Since teacher's characteristics are comprised of numerous indicators, thus, a single variable composite index is constructed using principal component analysis (PCA). Such characteristics are comprised of teacher's designation (PST, JST, HST, SS, SLT, OT, PTI, WIT, HMs, DT, others), their academic qualification (doctorate, M.Phil., masters, bachelor, intermediate, matriculation and below matric), type of post and professional training (PTC, CT, B.Ed., M.Ed., other trained and untrained). These indicators were initially discrete in nature, first converted by taking proportion of each variable from the total number of teachers and PCA is applied.

Similarly, PCA is also applied to construct another access to school outcome variable in equation 3 i.e., the school environment index. This index is constructed using a number of school-level indicators which are first converted into a dummy and scale variable.

Principal Component Analysis

PCA is a commonly used statistical technique for transforming orthogonally a large number of indicators into a composite index (indices) which can be further defined as the process of converting correlated variables to linearly uncorrelated components. Each component of PCA is a linear (weighted) combination of original indicators that follows the common arrangement. The construction of first PCA i.e., school facility index is consisting of 9

indicators. Out of these 9 indicators, 6 indicators have 2 dimensions and 3 having 3 dimensions. The first principal component is used for school facility index and for teacher's quality index as well. For school facility index, the first PC explains 33% of the total variation and 62% of the variance, using first three components. However, for teacher's index, it explains 13% of the total variation and 65% variation for first 10 components.

$$Yi = \beta 0 + \beta 1Ti + \beta 2\neg Wi + \beta 3Zi + \in \ldots\ldots\ldots\ldots (4)$$

$$Yi = \beta 0 + \beta 1Ti + \beta 2\neg Wi + \beta 3Zi + \in \ldots\ldots\ldots\ldots (5)$$

$$Yi = \beta 0 + \beta 1Ti + \beta 2\neg Wi + \beta 3Zi + \in \ldots\ldots\ldots\ldots (6)$$

However, the outcome variables given in above equations are the measures of quality education. These outcome variables namely student's promotion rate, repetition rate, dropout rate called student's flow rates that are constructed using cohort student flow rate method by taking class wise enrollment and number of repeaters.

Data Source

In assessing the impact of SMC on quality education, this study has constructed a number of variables using different techniques. In particular, at school level, this study has constructed five outcome variables namely, student's promotion rate, repetition rate, dropout rate (student's flow rates), school environment rate and teacher's resource index. Moreover, student's promotion rate (measure of access to school), student's repetition and dropout rates (measures of quality of education) are constructed using cohort student flow rate method. Additionally, the latter two indices are constructed, for assessing the quality of education, using a composite index methodology i.e., principal component analysis (PCA).

The school-level analysis is solely based on the Annual School Census called Sindh Education Management Information System (SEMIS), provided by the School Education and Literacy Department of Govt. of Sindh. SEMIS data provides comprehensive education profile of Sindh province which comprises of information such as school infrastructure and availability of school facilities, class-wise enrolment and number of repeaters and detailed teacher's information by gender and district. For impact evaluation of SMC, the study has used 2013-14 SEMIS dataset having 46,724 numbers of schools in province of Sindh out of which 6,207 schools are (temporary and permanently) closed.

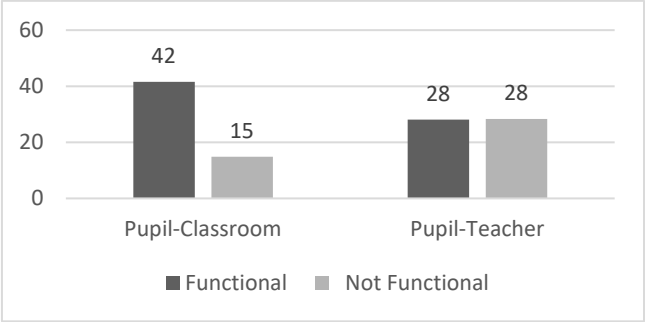
Findings of the Study

This section is providing the descriptive analysis which is basically consisting of the outcome variables used in drawing the empirical findings of the study. Moreover, the section is also

discussing the empirical analysis for instance, the average treatment effect of SMC using Propensity Score Matching technique.

Descriptive Analysis

The descriptive analysis of school-level data for the year 2013-14 can be depicted from the following figures. In general, the analysis is providing the description of schools in which SMC is functional and schools without SMC in Sindh province. However, the analysis is describing the pupil-class ratio, pupil-teacher ratio, schools' facilities, teacher's training by class-level and student's flow rates for primary by SMC status for the year 2013-14.



Pupil-Classroom Ratio & Pupil-Teacher Ratio by SMC

Above picture depicts the measures of quality education in Sindh that are pupil per classroom and per teacher ratios in schools in which SMC is functional and not functional for the year of 2013-14. However, a low pupil-classroom ratio is considered as a good measure of quality education. Above figure indicates that the overall pupil-classroom ratio is 42 per classroom in schools where SMC is functional, which is much higher than a ratio of 15 in schools where SMC is not functional. Additionally, as per international criteria, the pupil-teacher ratio should not exceed a ratio of 40:1, however, in case of Sindh, the pupil-teacher ratio remained 28:1 for schools where SMC is functional and not functional.

Schools with Basic Facilities by SMC

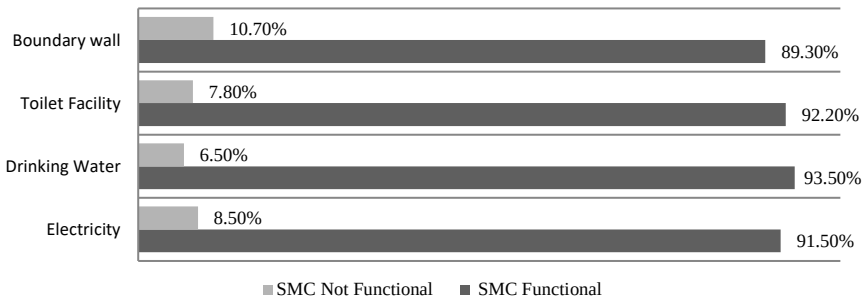
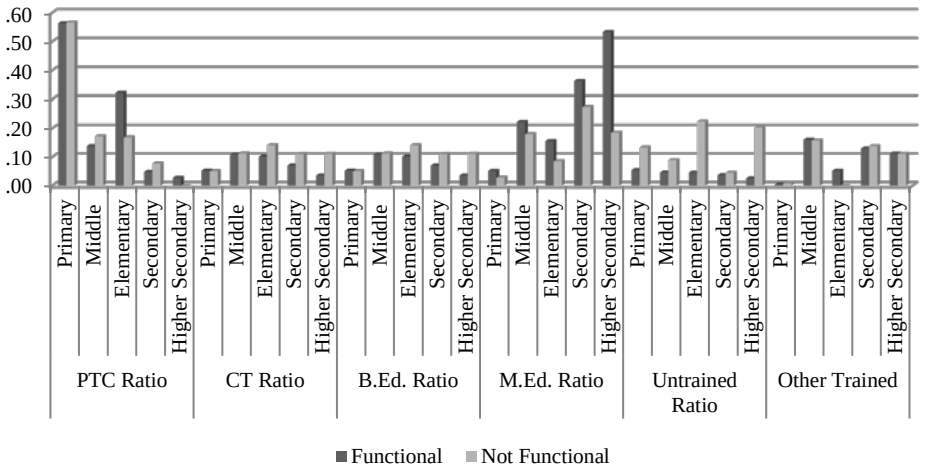


Figure above is showing the status of basic facilities available in public schools of Sindh for the year of 2013-14. Additionally, the figure is also distinguishing the facilities by SMC. Moreover, the figure is illustrating that the condition of schools with basic facilities in which

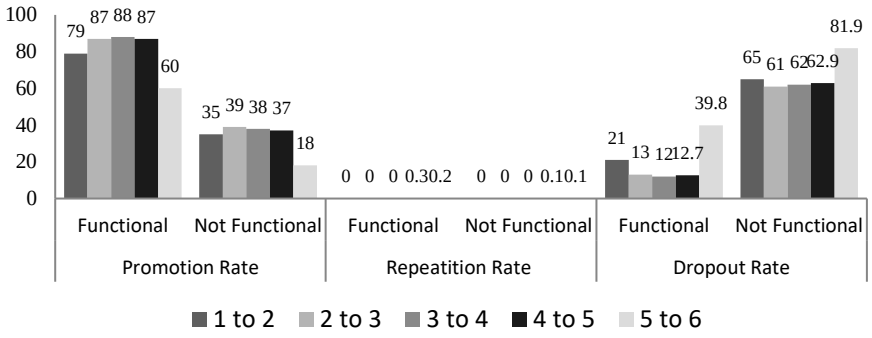
SMC is functional is significantly better than the schools where SMC is not functional which ensures the quality education in such schools.

Average Number of Teachers by Training, Level & SMC



The assessment of quality teachers is also very important element of quality education. Above figure depicts the average number of trained teachers across the different levels of class in schools of Sindh where SMC is functional and not functional for the year of 2013-14. Thus, in a broader way, the above figure reveals that most of the trained teachers are associated with the schools in which SMC is functional. Moreover, the PTC trained teachers are greater in belong to primary followed by elementary. However, the M.Ed. qualified teachers (belong to middle, secondary and higher secondary) are greater in SMC schools. Additionally, the figure is also presenting the condition of untrained teachers in both types of schools, which shows that the average number of untrained teachers is higher in schools where SMC is not functional.

Student's Flow Rates by SMC



Above figure presents the class-wise student's flow rates for primary level of education in schools of Sindh where SMC is functional and not functional. The figure depicts that the student's promotion rate in each class is significantly higher in those school where SMC is

functional. Moreover, class-wise repetition rate is slightly higher in SMC functional schools than schools in which SMC is not functional.

Additionally, the repetition rate for class 1 to 3 is zero that is because of the government of Sindh's policy through which all the students of class 1 to 3 were promoted. However, the dropout rate in each class is significantly lower in schools where SMC is functional as compared to the schools in which SMC is not functional. Furthermore, the figure also shows that the biggest dropout occurs for class 1 to 2 and class 5 to 6 in both types of schools. However, the dropout from class 5 to 6 reflects the transition from primary to middle-level schools and in some areas of Sindh; children who graduated from class 5 were not able to find any nearby middle-level school (Ali, 2011).

Empirical Findings

Following tables are providing the empirical findings of the impact of SMC on all the measures of quality education.

Table 1: Average Treatment Effects of SMC on Teacher's Index

Matched/Unmatched	Treated	Controls	Difference	T-stat
Unmatched	11.96	11.70	0.26	6.14
Matched ATT	11.96	11.78	**0.18**	2.21

The estimates of average treatment effect on treated (ATT) from matched sample and the estimates of average treatment effect from unmatched sample are given in the table below. These findings are consistent with the studies of Brinkerhoff (2003) and King & Ozler (2005). whereas, the studies conducted by Khan (2003) and Pryor (2005) provide negative impact of SMC.

Table 2: Average Treatment effect of SMC on School Environment Index

Sample	Treated	Controls	Difference	T-stat
Unmatched	0.35	-0.61	0.96	29.82
Matched ATT	0.35	-0.53	**0.87**	16.0

The above table is providing the impact of SMC on another measure of access to school that is school environment index. The estimated difference coefficients for the unmatched and matched samples are positive and statistically significant and reveal that the former is higher than the later, indicating an upward bias. Thus, the positive impact of SMC on school environment index provides that the implementation of SMC has increased the student's access to school in the province of Sindh.

Table 3: Average Treatment effect of SMC on Students' Flow Rates

Variable	Sample	Treated	Controls	Difference	T-stat
Promotion Rate	Unmatched	32.32	23.47	8.84	19.63
	Matched ATT	32.32	25.34	**6.97**	3.92
Repetition Rate	Unmatched	0.06	0.02	0.04	2.53
	Matched ATT	0.06	0.01	**0.05**	3.08
Dropout Rate	Unmatched	67.62	76.50	-8.88	-19.69
	Matched ATT	67.62	74.64	**-7.02**	-3.95

Table 4.4 is presenting the average treatment effect of SMC on student's flow rates such as promotion rate, repetition rate, and dropout rate. Here, the student's flow rates are considered as the measure of quality of education. Hence, the above table discusses the impact of SMC on each flow rate. In general, all the three estimated difference coefficients are statistically significant and positive except the dropout rate which is negative for both unmatched and matched samples and indicating a decline in student's dropout rate in Sindh over the period

Table 4: Average Percentage Bias

Group	Pseudo R^2	LR Chi-Square	Mean Absolute Bias
Unmatched	0.04	774.58*	70.6
Matched	0.003	263.23*	3.3

Table 4 is presenting the average treatment effect of SMC on student's flow rates such as promotion rate, repetition rate, and dropout rate. Here, the student's flow rates are considered as the measure of quality of education. Hence, the above table discusses the impact of SMC on each flow rate. In general, all the three estimated difference coefficients are statistically significant and positive except the dropout rate which is negative for both unmatched and matched samples and indicating a decline in student's dropout rate in Sindh. Moreover, the studies conducted by Marshall et al. (2008); Di Gropello and Marshall (2005); Pellini (2005); and Gertler et al. (2006) also found positive impact of community involvement on student's survival rates. Finally, King & Ozler (1998) found positive effect on student's promotion rate.

Conclusion and Implication

A number of studies empirically evaluated the impact of school-based management (SBM) and found positive, negative and mixed results quality education. In Pakistan, the recent education reform programs such as SERP-II and SDGs 2030, reports lessons from past failures of (MDGs and SERP) reform programs based on efficient monitoring and governance in the education system. Thus, the evaluation of such reform programs provides evidence-based useful insights for the policymakers to design more effective education-

related policies. This study is, therefore, an attempt to evaluate the impact of SMC intervention on the overall quality education in province Sindh using a sophisticated empirical approach commonly known as semi-parametric propensity score matching technique.

The overall findings of the study conclude that SMC has helped in improving the quality of education particularly, in province Sindh. Moreover, the study reveals that the average treatment effect of SMC on all the measures of access to school and quality education used in the study namely school environment index, teacher's index, student's flow rates, mainly student's promotion rate, and repetition rate, found significantly positive. Whereas, one of the student's flow rates that is student's dropout rate found significantly negative over the period of 2013-14 which ensures the improvement in the quality education particularly in schools where SMC is functional. Further to this, the findings also ensure that improved school facilities and quality of teachers are positively affected by SMC. Moreover, the study also assessed the quality of matching by different measures of quality check. It is evident from the overall matching quality assessment that matching is successful and hence, both the treated and untreated groups are similar to estimate the average treatment effect of SMC on quality education.

Finally, on the basis of the findings drawn, the study recommends that in order to achieve further improvement in schools, the government of Sindh should empower community involvement in rest of the public schools in which SMC is not functional. In addition to this, the government should empower teachers through their participation in decision making process and government should introduce teacher's professional training programs. For this, the government of Sindh should allocate more SMC funds for making school management effective in these schools. Furthermore, the findings of the study also recommend that the government should initiate more school-level interventions and reform programs to further improve the education system of Sindh and Pakistan.

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