Case Study

United Nations
Educational, Scientific and
Cultural Organization

International Institute
for Educational Planning

Punjab, Pakistan: Using open school data to improve transparency and accountability

Kashmali Khan

Pakistan

Ethics and corruption in education

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Presentation of the series: Ethics and Corruption in Education

Several studies conducted over the last two decades have emphasized the negative impact of corruption on the economic, social, and political development of countries. Corruption increases transaction costs, reduces the efficiency of public services, distorts the decision-making process, and undermines social values. Studies have also shown a strong correlation between corruption and poverty: statistical regressions suggest that an improvement in the 'control of corruption' indicator by one standard deviation (two points) is associated with an increase of some $11,000 in gross domestic product (GDP) per capita (Sturm, 2013, in OECD, 2015). Moreover, corruption tends to contribute to the reinforcement of inequities by placing a disproportionate economic burden on the poor and limiting their access to public services.

As a consequence, fighting corruption has become a major concern for policy-makers and actors involved in development. In view of the decrease in international aid flows and the increasingly stringent conditions for the provision of aid – due to growing pressure on public resources within donor countries and the pressure exerted by taxpayers on governments to increase transparency and accountability in resource management – fighting corruption is now regarded as a major priority on the agendas of countries and international agencies of development cooperation. The Drafting Committee of the World Education Forum expressed this concern in the following terms: 'Corruption is a major drain on the effective use of resources for education and should be drastically curbed' (UNESCO, 2000). In other words, to 'ensure inclusive and quality education for all and promote lifelong learning' – the fourth of the 2015 Sustainable Development Goals – the issue of corruption must be properly addressed.

A brief review of the literature highlights a number of global and sectoral attempts to tackle the issue of corruption. In the social sector, for example, several studies have been conducted on corruption in relation to the provision of healthcare services. However, it appears that the education sector has not received adequate attention from national education authorities and donors, despite numerous grounds for prioritizing the challenge of combating corruption in education:

- Public sector reforms aimed at improving governance and limiting corruption-related phenomena cannot produce significant results unless adequate attention is paid to the education sector, as in most countries this constitutes the largest or second-largest public sector in both human and financial terms.
- Any attempt to improve the functioning of the education sector to increase access to quality education for all will be undermined if problems related to corruption, which have severe implications for the efficient use of resources and the quality of education and school performance, are not being properly addressed.
- Lack of integrity and unethical behaviour within the education sector are inconsistent with one of the primary aims of education: to produce 'good citizens' who are respectful of the law, human rights, and equity. They are also incompatible with any strategy that considers education as a principal means of fighting corruption.

In this context, the UNESCO International Institute for Educational Planning (IIEP) launched a research project entitled 'Ethics and Corruption in Education'. Corruption is defined as the systematic use of public office for private benefit that results in a reduction in the quality or availability of public goods and services. The main objective of this project is to improve decision-making and the management of educational systems by integrating

governance and corruption concerns into methodologies of planning and administration of education. More specifically, it seeks to develop methodological approaches for studying and addressing the issue of corruption in education and to collect and share information on the best approaches for promoting transparency, accountability, and integrity in the management of educational systems in both developing and industrialized countries.

The project includes publications on topics such as school financing, pro-poor education incentives, teacher codes of conduct, textbook production and distribution, and academic fraud. It also features monographs on success stories in improving management and governance, as well as case studies that facilitate the development of methodologies for analysing transparency and integrity in education management.*

Within this framework, IIEP conducted research to explore the recent development of school report cards and to examine cases in which report cards prove especially successful in helping to improve transparency and accountability in education systems. This research included the preparation of case studies on the use of open school data in six countries from Asia and the Pacific – namely Australia, Bangladesh, India, Indonesia, Pakistan (Punjab), and the Philippines – as well as two state-of-the-art papers on Africa and Latin America.

This publication presents the case of Punjab, Pakistan. It is based on interviews with key informants and a survey of 250 school-level actors. It compares the design and implementation of two major initiatives: the school report cards project developed by the Programme Monitoring and Implementation Unit (PMIU), which is government-led, and the Annual Status of Education Report (ASER) programme, which is citizen-led. It investigates and compares the type of information published, those who publish it, and how it is accessed. It identifies the most critical data for improving transparency and accountability, and explores how different categories of stakeholders access and utilize the information, the conditions required to improve transparency and accountability in the education system, and the limits of such processes. It concludes with a series of recommendations aimed at decision-makers and open school data programme managers.

Finally, it highlights the importance of open school data to improve performance management, but also acknowledges the difficulties facing those who do not have access to the internet or are not familiar with English in making use of it. The publication ends with a series of recommendations including: bringing information directly to users through data packs or community-level gatherings, involving community leaders and citizens in communication strategies, and giving community members a greater role in the data collection process.

IIEP is very grateful to Kashmali Khan for her valuable insights and would like to thank her accordingly. It would also like to thank all the people interviewed as part of this research and those who gave their time to participate and collaborate in the fieldwork.

Jacques Hallak** and Muriel Poisson***

* An information platform entitled ETICO has been created within the framework of the project and can be accessed at: http://etico.iiep.unesco.org

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Foreword

The number of countries providing the general public with access to school data has grown rapidly over the past decade, encouraged by the development of information technologies and under the pressure of social movements demanding the right to information and greater accountability in service delivery. A wide variety of initiatives have been developed to share school-level information in the form of 'school report cards'. These provide key information about a school, including student enrolment, funding, number of teachers, teacher qualifications, pupil/teacher ratios, conditions of school facilities, textbooks, and student achievement. In some countries, governments have taken the lead in disseminating such data, relying on existing educational management information systems. Elsewhere, civil society organizations (CSOs) have taken the initiative to produce school report cards for selected schools, placing the emphasis on community engagement in data collection and use.

In recent years, the Asia-Pacific region in particular has become a hub for increased initiatives for access to information and calls for more transparent and accountable government. Australia, New Zealand, and Singapore have pioneered innovative and comprehensive uses of new technologies with the launching of My School, Education Sector Indicators, and the School Information Service respectively. Grassroots movements in India have stimulated the passing of Right to Information Acts in many states during the last decades; furthermore, initiatives aimed at displaying information through district report cards and school boards have spread throughout the country. Bangladesh now has more than a decade of experience in developing school report cards with the support of civil society, and the Check My School initiative has spread from the Philippines to Cambodia and Indonesia. These are but a few illustrations which highlight the opening up of school data to the general public throughout the region.

It is widely acknowledged in the literature that public access to information is one of the most efficient means of achieving better transparency and accountability in the education sector. It enables education authorities not only to better monitor educational progress and outcomes but also to detect bottlenecks in the system and take adequate measures to address them. It also enables school communities to check whether they have received all the resources they were entitled to, in terms of funding, teachers, textbooks, and so on. Finally, it enables parents to exert pressure on school authorities and public officials to improve service delivery. Nevertheless, experience shows that the link between data, transparency, and accountability is not straightforward in practice, and needs to be unpacked carefully.

Indeed, while open school data are important, the information published is not always the kind most urgently needed to improve accountability in the management of education systems. In addition, when data are available to the public, they are not necessarily in easily accessible formats, and people are often unaware of how to access and utilize those data. Moreover, sharing best practices in this area has not yet been carried out in a useful and systematic manner. Essential to addressing these issues is an increased dialogue between key stakeholders, that is to say government education officers and planners responsible for data collection and dissemination, CSOs involved in the empowerment of citizens through information, and parent representatives.

This raises a number of questions:

- What data are most relevant to improving transparency and accountability in the system?
- What format is most likely to encourage school communities to make better use of data?

- What can be done to ensure that the data provided benefit more than a small proportion of the population, allowing all the community to make informed decisions?
- What mechanisms need to be put in place to ensure that parents and communities can make proper use of data?
- What incentives are needed to help stakeholders improve their practice?

Such questions can be seen as all the more relevant as the amount of school data – and the number of countries adopting school report cards – continues to grow. They are also timely, as there is still a lack of robust assessment of the actual efficacy of such initiatives: the 'lessons learned' so far rely predominantly on desk reviews and anecdotal evidence. They are also critical for ascertaining whether the conditions for the usefulness of open school data are properly taken into account, together with other factors critical for improving transparency and accountability in a sustainable way.

In this context, the UNESCO International Institute for Educational Planning (IIEP) initiated a research project in 2014 on 'Using open school data to improve transparency and accountability in education', so as to compare the motivations, purposes, audiences, data sources, contents, uses, and impacts of school report cards developed in different regions of the world.

The overall goals of this programme are to develop an evidence base for the most critical data needed and the most effective open education policies for improving government transparency and accountability in education; helping decision-makers and educational managers make informed decisions about the design and implementation of open education data policies, so as to promote transparency and empower citizens to fight against corruption; and building the commitment and capacity of CSOs and media representatives, in addition to education officials in charge of access to information, to work together to develop access to more practical, effective, and usable educational data.

The research addresses the necessary conditions for enabling open education data to promote transparency and accountability in education. It pays particular attention to data published at school level through school report cards, in the belief that the school level is particularly critical for encouraging citizens to make the best use of the information provided and to act upon it. It analyses the chain of action needed for developing school report cards successfully at each of the steps involved in their design and implementation.

The main assumptions underlying the research are as follows: first, open data initiatives are powerful tools to improve transparency, hold schools accountable, and reduce corruption risks in education; second, government-led initiatives are less likely than citizen-led initiatives to respond to users' needs, engage them, and generate real impact, since they are often more supply- than demand-driven. And third, all users do not benefit equally from open data initiatives. In the absence of adequate safeguards, such initiatives can enhance inequalities and result in 'elite capture of information'. Within this framework, the research attempts to address and document the following questions:

- What is an enabling legal framework for access to information initiatives in the countries under analysis?
- What are the most critical data for revealing corruption in different areas such as school funding, infrastructure procurement, or school and teacher management?
- Which information model has proven to be more effective: supply-driven (for top-down management) or demand-driven (for bottom-up control)?
- How can we ensure that the information is actually being used by the target audiences in the desired manner?
- What is an effective set-up that will facilitate participation by the general public?
- How can demand for information be created among a desired range of audiences?
- What successful actions following the publication of school-level data have a real impact in improving transparency and accountability in the education sector?

- What are the potential adverse effects of access to information on the existing education systems?

The research focuses on countries from Asia and the Pacific which have developed innovative projects during recent years in the area of open data in education, including Australia, Bangladesh, India, Indonesia, Pakistan (Punjab province), and the Philippines.* In each participating country, national researchers have analysed in detail these initiatives' aim to share access to school data with the general public in order to improve transparency and accountability and fight corruption in education systems. They have compared, as far as possible, two types of initiative, one that is government-led (the collection and distribution of school-level information is initiated by the central authority of the country or by a jurisdiction), and one that is citizen-led (the collection and distribution of school-level information is initiated at the community level). The following activities were accordingly undertaken at country level:

- The analysis and collection of relevant documentation and laws related to the right to access information, including legislation specific to the education sector, if any;
- A review of the list of education data shared with the public at all levels of the system, but particularly at the school level, produced and disseminated by government authorities and also through large-scale civil society initiatives;
- A series of semi-structured interviews with key informants (people in charge of the implementation of the right to information legislation, education sector managers, actors from CSOs involved in the empowerment of citizens though public access to data, members of parent associations, and representatives of the media);
- A survey of 250 school-level actors, using a multi-stage stratified sample method to illustrate the diversity of perspectives and perceptions about the usefulness of open education data, considering socio-economic, educational, and geographical factors. Informants included head teachers, teachers, parent–teacher associations, parents, and community leaders.

At the school level, field surveys helped to identify the type of information published, those publishing it, and how it is accessed; the most critical data for improving transparency; how different categories of stakeholder access and use the information; the conditions required to impact the level of transparency and accountability in the education system; and the limits of such processes, particularly from a legal perspective. Their main findings are analysed in detail in a set of case studies published by IIEP in its series, 'Ethics and corruption in education'. The current report presents the results of the case study conducted in Punjab, Pakistan.

It is hoped that the results of this work will help build the capacities of education officials, as well as civil society representatives in charge of the management of school data, to develop access to practical, effective, and usable open data in education; to encourage further dialogue and cooperation between stakeholders within individual countries and in the wider region with respect to the conditions in which such initiatives can improve accountability in education; and beyond this, to enable promoters of public access to information based in different regions of the world to learn from the success and limits of the experiences of other regions.

IIEP would like to thank Kashmali Khan for her valuable contribution and the interviewees for sharing their knowledge and experience. It would also like to express its gratitude to the high-level decision-makers from the six countries under review, who agreed to discuss the main findings of the research during a policy forum organized by IIEP in Manila, Philippines, from 24 to 26 January 2018.

Muriel Poisson, Programme Specialist, IIEP

* The six case studies have been published as part of the IIEP Series on Ethics and Corruption in Education, and are available on the Institute's publication website: www.iiep.unesco.org

This study was prepared under the supervision of Muriel Poisson, Programme Specialist at the UNESCO International Institute for Educational Planning (IIEP).

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Abbreviations

AEO	Assistant education officer
ASER	Annual Status of Education Report
CEO	Chief executive officer
CNIC	National identification card
DC	District commissioner
DDEO	Deputy district education officer
DEA	District education authority
DEO	District education officer
DfID	Department for International Development (UK)
DMO	District monitoring officer
DRC	District Review Committee
DSD	Directorate of Staff Development
DTE	District teacher educator
DTSC	District training and support centre
GDP	Gross domestic product
GoPb	Government of Punjab
I-SAPS	Institute of Social and Policy Sciences
LND	Literacy and Numeracy Drive
MEA	Monitoring and evaluation assistant
NSB	Non-salary budget
PEC	Punjab Examination Commission
PEF	Punjab Education Foundation
PESP 1 & 2	Punjab Education Sector Programme
PITB	Punjab Information Technology Board
PMIU	Programme Management and Implementation Unit
PTA	Parent–teacher association
PPP	Public–private partnership
PreDRC	Pre-district review committee
RPM	Regional programme manager
RTI	Right to Information Act
SC	School council
SCMP	School Council Mobilization Programme
SED	School Education Department
SLO	Student learning objectives
SMS	Short Message Service
SMU	Special Monitoring Unit
TB	Punjab Textbook Board
TE	Teacher educator
TVP	Third-party validation

Executive summary

Under Article 25-A of its constitution, Pakistan is committed to providing 'free and compulsory education to all children of the age of five to sixteen years in such a manner as may be determined by law'. However, given the number of children still out of school in the country, the efficiency of service delivery needed to improve and the 18th constitutional amendment was passed, devolving education from the level of federal to provincial government. The Government of Punjab's success in its education reforms shows the practical sense of transferring power to those who understand the political nuances, the people, and the land they are governing.

One of the most significant steps taken by the provincial government in improving accountability and transparency in the education landscape was the development of the Programme Monitoring and Implementation Unit (PMIU), which is an open data initiative that publishes, online, the monthly performance of almost 53,000 public schools in Punjab across specific educational indicators (such as student attendance, teacher presence, and school facilities). The information collected is evaluated by pre-district committees, district review committees and CEO conferences every month in order to monitor progress and identify where further work needs to be done. Stocktaking meetings, held with the chief minister every two months, ensure each district is answerable for its performance; top performers are praised and poor performers are subject to sanctions.

The existence of a database such as the PMIU would appear to have many advantages. It adheres to the Right to Information Act, empowers the public, promotes data-driven decision-making at all tiers of the education bureaucracy, and sets a framework of accountability. This report, however, aims to provide a more in-depth assessment of the PMIU, questioning how effective it is, and can be, in promoting accountability and transparency in Punjab. It measures how much public interest there is in obtaining the information published by the PMIU, and, where interest exists, whether the data are accessed widely or only by a section of potential users. After assessing the impact and implications of making public data widely accessible through the PMIU, the study considers the conditions necessary to make an open data initiative successful in the context of Punjab, and proposes recommendations for the provincial government to consider in strengthening the scope and framework of the PMIU.

The study collected data from three contrasting districts – Rawalpindi, Hafizabad, and Chiniot – chosen on the basis of the adult literacy rate. The perspectives of 250 parents, head teachers and parent-teacher association members in these three districts were measured through surveys. Additionally, interviews were conducted with key educational actors at a provincial level, and focus groups were conducted with teachers and students.

Findings from our analysis of the PMIU, together with the quantitative and qualitative data collected for the purposes of this report, show that an open-data initiative can promote accountability and transparency in the province. With a rigid educational hierarchy in place, where every member is selected on merit and is aware of the line of reporting, the PMIU promotes feedback between different tiers of bureaucracy, and fosters better communication between the government and its people. The support of the government is necessary for the success of an initiative such as the PMIU, and regular meetings with the chief minister act as a powerful performance management tool. The PMIU does succeed in measuring a majority of the educational indicators deemed most important by community members, but its effectiveness is undermined by the public's inability to access it. Since data are published online, in a secondary language, it does not engage the wider community, who may not have access to the internet or familiarity with the English language. Critically, this access gap means that much of the general population is

unaware that the PMIU exists at all. As a result, while all administrative officials are aware of how to access and use information published by the PMIU, most parents in Chiniot, for example, are unaware of its existence.

The success of the PMIU in Punjab would be broadened if some of the following recommendations were taken into account:

- **A revaluation of the feasibility of an online platform as the primary means through which data are made available.** By taking information directly to the public, through data packs or community-level gatherings, the PMIU would have greater reach and popularity.
- **Proper marketing, advocacy, and promotion of the PMIU**. Comparison with the Annual Status of Education Report (ASER) citizen-led initiative, which generates front-page headlines, even though its surveys are based on estimates and are only carried out once a year, there is scope to improve the visibility of the PMIU. Potentially, as with ASER, involving citizens in marketing strategies and enlisting the support of community leaders would be effective tools in spreading the word.
- **Expanding the set of indicators and sample population targeted by the PMIU**. While the PMIU currently focuses on access indicators in public schools across the province, it should place emphasis on quality indicators, such as how well students are learning what they are taught, and financial indicators, such as how the provincial education budget is spent. Furthermore, the prevalence of private schools in the province is increasing, and an accurate examination of education in the province should give weight to this sector as well.
- **Empowering the public by giving community members a greater role in the data collection process**. While the PMIU enlists highly trained monitoring and evaluation assistants (MEAs) to undertake the process of collecting information in every district, there must be a greater involvement of non-government actors in education-related decision-making. A recently developed Education Hotline gives the public a chance to record their complaints and inquiries, but school management needs to be more involved.[1] A pilot conducted in Kasur showed the benefits of working with head teachers to promote the PMIU, and results were extremely favourable. If more effort is made to discuss the PMIU with community members, record their feedback and respond to it, the PMIU will be able to extend its reach and encourage the public to take more active roles in improving education in their districts.

Overall, this report concludes that the PMIU is a ground-breaking initiative in the educational landscape of the country. It acts as a necessary step in making the actions of the government transparent and directly accountable to the public. And while the publication of such information might be considered a threat to security in the context of Punjab, the success of the PMIU is evident in the way in which it has been adopted in other provinces, which are working towards creating similar databases in their own areas. By incorporating the suggestions proposed in this study, the provincial government would be able to consolidate the benefits of this initiative, and potentially discover new areas for expansion that are still to be explored.

1. This hotline is discussed in more detail in Chapter 3 of this report

1. Introduction

1.1 Punjab: A complex educational landscape

The success of any developing country depends on the strength of its education system. An effective education system based on transparency, accountability, and efficiency can pave the way for economic prosperity, labour productivity, and the elimination of social inequalities.

Pakistan has a literacy rate of 56 per cent, one of the lowest in the world. Pakistan's expenditure on education as a percentage of gross domestic product (GDP) is a mere 2 per cent – below that of countries in the region such as India, Bhutan, and Sri Lanka. With an estimated population of 196 million in 2017, Pakistan, a country afflicted with problems of social inequality, poverty, and terrorism, struggles to cater to the diverse needs of its burgeoning population.

In order to build a picture of public school-level education in Pakistan, Punjab offers a rich source for analysis. First, Punjab is the most populous province in the country, containing nearly half of Pakistan's total population. Second, Punjab has the most advanced education data-collection system nationwide. And third, the province has proved to be a trendsetter in terms of performance, where other provinces tend to follow the standards established there.

The scale of the educational challenge faced by Punjab can be illustrated by the fact that the province is home to more than 11 million children of primary school age (between 5 and 9 years). Yet, while 90.5 per cent of children who fall into this bracket have access to formal schooling, more than 1 million children are still deprived of primary schooling. This problem of access is further exacerbated by the sharp contrast between the resources and provision available in the more affluent north of Punjab and those available in the deprived south. The latest figures from the Punjab Education Survey reveal that more than half of Punjab's out-of-school children are clustered in a few southern districts of the province, in primarily rural communities considerable distances from formal schools. Additionally, equity in education delivery is a growing challenge in Punjab; not all children have equal access to quality primary education, particularly in the low-performing southern districts of the province. Around 96 per cent of children of primary school age attend school in northern districts, compared to only 83 per cent in southern districts. In addition, there is a fairly large urban-rural disparity in the demographics of out-of-school children, with 48 per cent of children from rural areas not attending school compared to 24 per cent of those in urban areas. The existence of additional socio-cultural barriers, such as poverty, gender, religion, ethnicity, and caste, has a compounding effect, making education an unattainable goal for many. The challenge facing education in Punjab can, therefore, be summarized as a problem of access, quality, and equity.

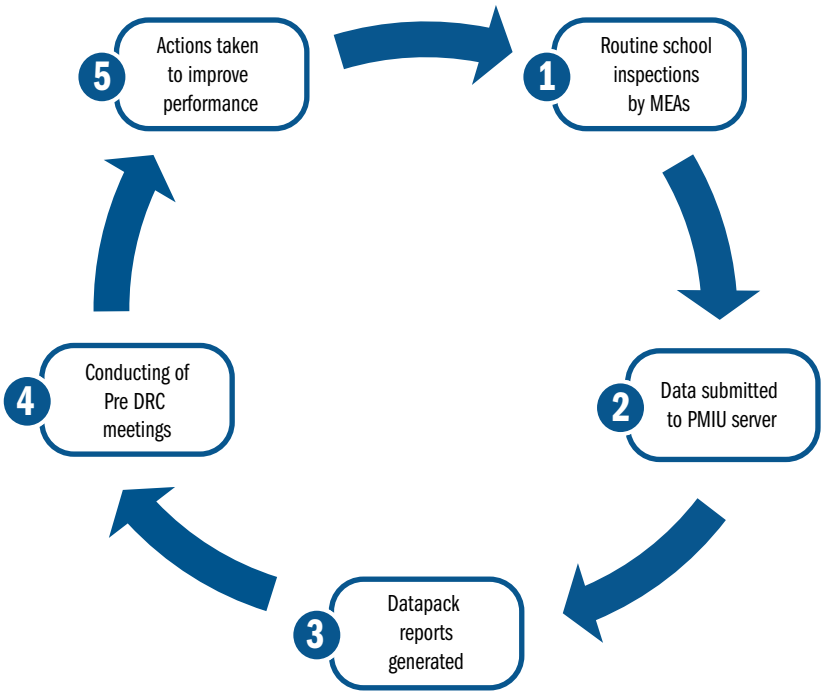
In terms of the quality of education, while learning in government schools, as demonstrated by performance on core literacy and numeracy indicators, has improved in Punjab, government schools still lag behind their private-sector counterparts. Teachers, for example, still require further training to be able to teach to the textbooks. And while opportunities for teachers to receive training exist in the system, most are outdated, are not standardized, and are not aimed at improving the pedagogical skills of teachers. As a consequence, learning levels remain low. According to the 2015 Annual Status of Education Report, in Punjab, 30 per cent of Grade 5 students could not read a basic text in Urdu, 40 per cent could not read sentences in English and 41 per cent could not perform two-digit division (*The News*, March 2016). The data also showed that the performance of students from rural districts was significantly poorer than that of urban areas.

1.2 The Programme Monitoring and Implementation Unit

To implement reform objectives for Punjab, in 2005 the Government of Punjab (GoPb) and the World Bank set up the Programme Monitoring and Implementation Unit (PMIU) with the intention of improving data collection, transparency, and monitoring of the education system in Punjab. The PMIU provides an online, open data dashboard, designed to promote freedom of information by increasing citizens' access to education data and enabling accountability of the government. The PMIU focuses primarily on public school data, owing to the burgeoning and geographically disparate growth of schools in the private sector. While 60,502 private schools have been officially recorded, there is no up-to-date information on the actual number, as many private schools remain unregistered and unregulated. The government does, however, participate in data collection of public-private partnership schools of the Punjab Education Foundation (PEF) that are subsidized by the GoPb.

As part of the PMIU, nearly 1,000 monitoring and evaluation assistants (MEAs), under the supervision of 36 district monitoring officers (DMOs), collect public school data from Punjab's 54,000 public schools on a monthly basis across the school year (April to March). This information is collected against several indicators, including student attendance, retention, management, and basic infrastructure. MEAs use hand-held tablets on their visits to public schools that allow data to be synched directly to the PMIU's education databank. These data are real-time and are updated as soon as information is received from a spot visit in the field. The monthly monitoring data collected by the MEAs are used for monthly, quarterly and annual ranking of the districts and divisions; weights are assigned to different indicators in the monthly monitoring forms based on a composite index, and district performance is ranked accordingly. A pre-district review committee (PreDRC) at district level appraises each month's progress, and takes decisions on issues highlighted through the composite index. The index also enables comparison across districts, and helps the PMIU provide feedback to district governments on areas where administrative measures need to be taken (*Figure 1*).

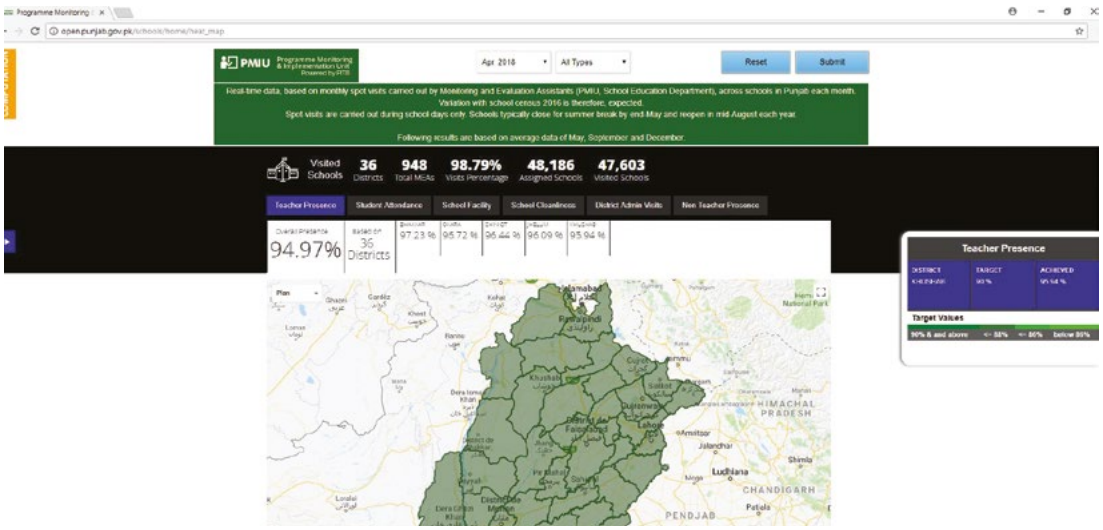
Figure 1. The cycle of the PMIU data collection and implementation



Source: Prepared by the author (all the figures and tables in this book have been prepared by the author).

As custodian of the central database, the PMIU ensures the hygiene of the collected data, analyses them for key insights, and shares results through an easy-to-use, open online platform, accessible to researchers, educationists, journalists, policy-makers, and the general public. Given the diversity of its target audience, the interface of the PMIU website, developed by the Punjab Information Technology Board (PITB), does not feature the complex techniques used to analyse the collected data, such as interpreting correlation or regression coefficients for variables. Data are presented in a non-technical, simple format that can be comprehended by the average user. For more detailed analysis, reports and publications are available to download. By navigating the PMIU database, visitors can monitor the latest performance of any region in Punjab and compare it to previous performances. Information can be viewed from a top–down provincial view or by individual schools in districts. The website uses a geographic information system to map data at district, sub-district, and school levels. *Figure 2* gives a snapshot of the PMIU dashboard.

Figure 2. Snapshot of the PMIU dashboard developed by the PITB



The PMIU is designed to provide technical, logistical, and administrative support to policy-makers and -implementers, report on the progress and impact of programmes, identify gaps and bottlenecks, broker donor support, and manage resources better. Overall, the objectives of the open database are to 'ensure the effectiveness of the activities being undertaken; the efficiency with which they are implemented; the continued relevance of the proposed actions in an evolving environment to assess the impact and determine the sustainability of the outputs; and to propose corrective courses of action whenever necessary' (Sajjad and Shah, 2013).

The existence of the PMIU provides evidence-based tracking and paves the way for a trend of data-driven decision-making, greater accountability, and regular feedback loops that can ensure the success of education programmes.

1.3 Rationale of the report

As the PMIU is the largest, most comprehensive data-collection platform in Pakistan, this study will focus on analysing the implications and impact of this open-data initiative. The importance of this initiative becomes evident when one considers that no other database of this magnitude or scale currently exists in Pakistan. Citizen-led, household-based initiatives, such as the ASER, do exist in Pakistan, and focus primarily on rural districts, but they do not offer the kind of representation that the all-encompassing PMIU system does. Currently, the PMIU is the only school-level, data-gathering database in Pakistan,

government-led or otherwise, that updates its figures on a monthly basis, covers as many as 54,000 public schools, and is open and accessible online.

This case study will, therefore, consider how feasible an online database is in terms of conveying information to the public in the context of Punjab, where several socio-economic factors may hinder the success of an internet-based programme. It explores to what degree the public accesses and consumes the information provided by an open-data forum. It also examines whether the government-led PMIU is sufficient, in and of itself, to bring about transparency and dissemination of data in Punjab. By analysing the perspectives of key education actors from government-led organizations, as well as members of the community, this report will assess (i) whether the process of data collection by the PMIU is transparent and free from bias, and (ii) whether the monitoring and evaluation driven by PMIU data is making schools more accountable to the government, and, at the same time, the government more accountable to the public.

Furthermore, this study will explore how the government-led PMIU initiative engages with the needs of its target audience in order to generate impact. Through this, the effectiveness of feedback mechanisms, designed to help the public communicate with the government, will be explored, and also whether the government can take the demands of its citizens into account and be able to plan and implement effective redressal mechanisms. Finally, this report will delineate the users and beneficiaries of PMIU data, in order to gauge whether any segment of Punjab's population benefits more from an open education data policy than others. If access to data is segmented, the report will examine how this impacts on policy-making in Punjab, and how it can be addressed.

1.4 Methodology

Data have been collected in three contrasting districts, using adult literacy rates from the 2014–2015 Pakistan Social and Living Standards Measurements survey as the basis for selection (measures such as GDP per capita and primary school completion rates could not be utilized in the selection of districts owing to the absence of any credible data sources for these indicators) (Pakistan Bureau of Statistics, 2016). Both district- and school-level comparisons are available on the PMIU portal; however, schools can only be compared with other schools of same district. Users are able to select a district from the home page and access the school comparative analysis.

The districts were selected using a random number table that grouped 36 districts in Punjab into three main categories: highest-level adult literacy (A), medium-level adult literacy (B), and lowest-level adult literacy (C). The selected districts are:

- Category A: Rawalpindi
- Category B: Hafizabad
- Category C: Chiniot

This report utilizes semi-structured interviews with key informants at provincial level, along with a survey of 250 school-level actors. Of these 250 participants, an average of 16 school-level actors per school were sampled, including parents, a head teacher, a representative of the school-management committee, and one community leader from each institution. Seventeen schools, from across three districts, made up the sample. The number of schools sampled per district, taking into account the urban and rural distribution of schools in the districts, is given in *Table 1*. Of all the schools in the three districts, 75 per cent are in rural areas, which is why at least 75 per cent of the sample schools were rural schools. High schools account for approximately 10 per cent of total schools in a district; therefore, a high school was selected from each district. Furthermore, as primary schools account for approximately 70 per cent and elementary schools approximately 20 per cent of all schools, each district had corresponding representation for primary and elementary schools. All the schools were randomly selected and efforts were made to make the sample as representative as possible.

Table 1. Number of schools sampled per district, taking into account the urban and rural distribution of schools in the districts

District	School level	Total	Urban	Rural	Total urban schools sampled	Total rural schools sampled
Rawalpindi	High & higher secondary	420	119	301	6	3
Rawalpindi	Middle	313	53	260		
Rawalpindi	Primary	1105	120	985		
Rawalpindi	**Grand total**	**1838**	**292**	**1546**		
Hafizabad	High & higher secondary	82	18	64	1	3
Hafizabad	Middle	112	12	100		
Hafizabad	Primary	603	63	540		
Hafizabad	**Grand total**	**797**	**93**	**704**		
Chiniot	High & higher secondary	64	7	57	1	3
Chiniot	Middle	100	12	88		
Chiniot	Primary	507	61	446		
Chiniot	**Grand total**	**671**	**80**	**591**		

The surveys were conducted through three field coordinators, one in each district. Given the educational and socio-economic background of the school administration, community representatives, and parents, the surveys were conducted in Urdu, and field coordinators were trained in translating the questionnaire to Urdu to ensure the robustness and reliability of data collected.

After securing the requisite approval from district education officers, the field coordinators contacted the head teachers of the selected schools to gather their responses. In the same meeting, the coordinators identified 15 students at random in every school and asked the head teacher to invite their parents to participate in the survey. In most cases, the parents were willing and able to take part in the survey. However, there were two schools, one in Hafiz Abad and one in Rawalpindi, where not all parents were present. Sampling 15 students in each school, however, ensured that there were additional respondents to overcome such last minute drop-outs.

The community leaders surveyed were selected following initial conversations with school administration and parents. During these conversations, the field coordinators asked each respondent to suggest a community leader who, in their opinion, should be contacted for the survey. A tally sheet of the names provided by respondents in each school was maintained by the field coordinator and the name with highest frequency was contacted. In eight out of 17 schools, respondents chose their mosque imam as community representative. In other instances, respondents selected a community elder or school principal as community leader. The selected people were contacted and surveyed accordingly.

While developing the survey methodology and sample selection, additional respondents at every level were surveyed to overcome any potential shortfall caused by respondent drop-out. There was considerable risk that, owing to the complexity of the survey instruments, the respondents, given their educational background, might not understand some questions, thereby adding to item non-response. However, to deal with this challenge, the coordinators, as noted above, were trained to translate the survey questions into Urdu. Of the 250 respondents surveyed, 232 survey forms were

completed, without any instances of non-response. The remaining 18 survey forms, all from parents, included some level of item non-response. But since the rate of non-response was no more than 7 per cent for any survey item, there was no need to make adjustments to the data prior to analysis.

1.5 Structure of the report

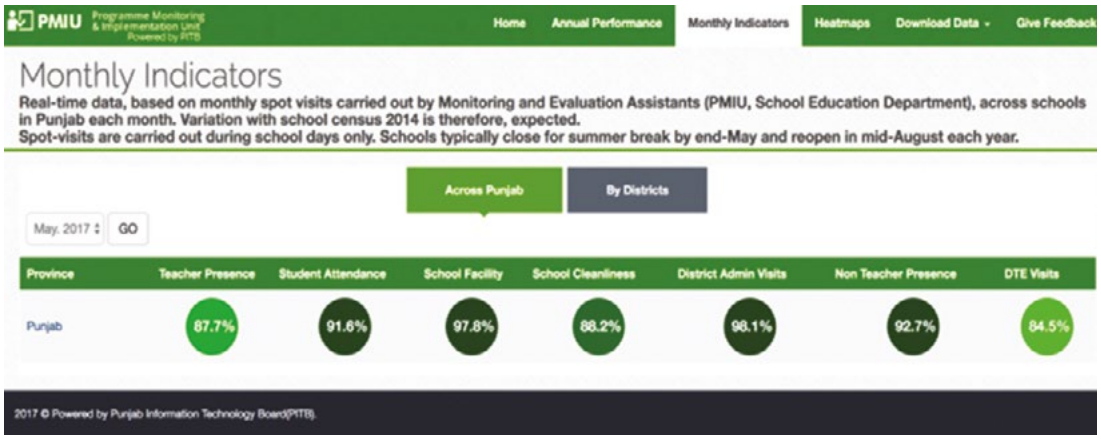
Ths report began with an introduction to the education system of Punjab, a summary of the PMIU, and an outline of the methodology used in collecting interview and survey results. The second part will take a closer look at how the PMIU operates, in terms of the specific school-level indicators measured, how data are collected and where, and who accesses this information. The third part will explore how the PMIU drives financial, management, and pedagogical accountability, and the consequences. The fourth and fifth parts of the report will analyse the quantitative and qualitative data collected from interviews and surveys to observe trends and recommendations to improve the functionality of the PMIU. An overview of the different aspects of the PMIU evaluated in the report is presented in the conclusion.

2. Main features of the initiative

2.1 What the PMIU measures

The PMIU works in conjunction with Punjab's School Education Department (SED) to regulate a process of real-time data collection and an efficient system of monitoring and evaluation in Punjab. The data collected by the PMIU reveal the state of Punjab's education system through school report cards that are based on a set of indicators. The indicators cover a school's demographics, financial information, and structural features. *Figure 3* shows the broad categories of indicators that are measured by the PMIU.

Figure 3. List of monthly indicators measured by the PMIU across Punjab



Core indicators

- ***Student attendance***: This indicator measures physical presence of students (headcount) on the day of the MEA's visit and covers enrolment at each grade. It is further split into three categories: *Kachi* or pre-school, which primarily includes children under the age of 5; Grades 1–5, which primarily include children between 5 and 10; and Grades 6–12.
- ***Teacher presence:*** This indicator measures the physical presence of teachers (headcount) on the day of the MEA's visit across all filled teacher posts. Teachers on leave are counted as not present.
- ***Functioning of facilities:*** Four sets of facilities are tracked under this indicator: drinking water, electricity, boundary walls, and toilets. It is necessary that all four facilities are available and fully functional for a school to be awarded a score for this indicator.
- ***Administrative visits:*** This indicator measures visits to school by any of the district education officials: assistant education officers, deputy district education officers, district education officers, and chief executive officers. MEAs verify administrative visits using the logbook, where visitors record details such as the time and date of their visits, and the daily teachers' attendance register used in every school.

Retention indicators:

Retention: This indicator tracks enrolment throughout the academic year. It is calculated by dividing enrolment in the month of monitoring by the highest enrolment in any month of the ongoing academic year. This indicator, like student attendance, is measured separately for Grade *Kachi* and Grades 1–5.

Monitoring and management indicators:

Assistant Education Officer (AEO) span of control: This indicator shows the average number of schools per AEO.

Infrastructure indicators:

- ***Dangerous buildings:*** This indicator tracks the percentage of buildings that have been assessed as fully or partially dangerous by the MEAs.
- ***Overcrowding and multi-grade classrooms***: This indicator measures the availability of sufficient classrooms for children on a pre-defined scale, as below:
  - 0–30 enrolment: 2 classrooms
  - 30–45 enrolment: 3 classrooms
  - 45–150 enrolment: 4 classrooms
  - 150–230 enrolment: 6 classrooms
  - 230–310 enrolment: 8 classrooms
  - 310 and greater than 310 enrolment: total enrolment/50
- ***Overcrowding and multi-grade teachers:*** Similar to the previous indicator, this tracks the student–teacher ratio on a pre-defined scale, as below:
  - 0–30 enrolment: 2 teachers
  - 30–45 enrolment: 3 teachers
  - 45–180 enrolment: 4 teachers
  - 180–300 enrolment: 6 teachers
  - 300–400 enrolment: 8 teachers
  - 400 and greater than 400 enrolment: primary student–teacher ratio of 50/1

Financial indicators:

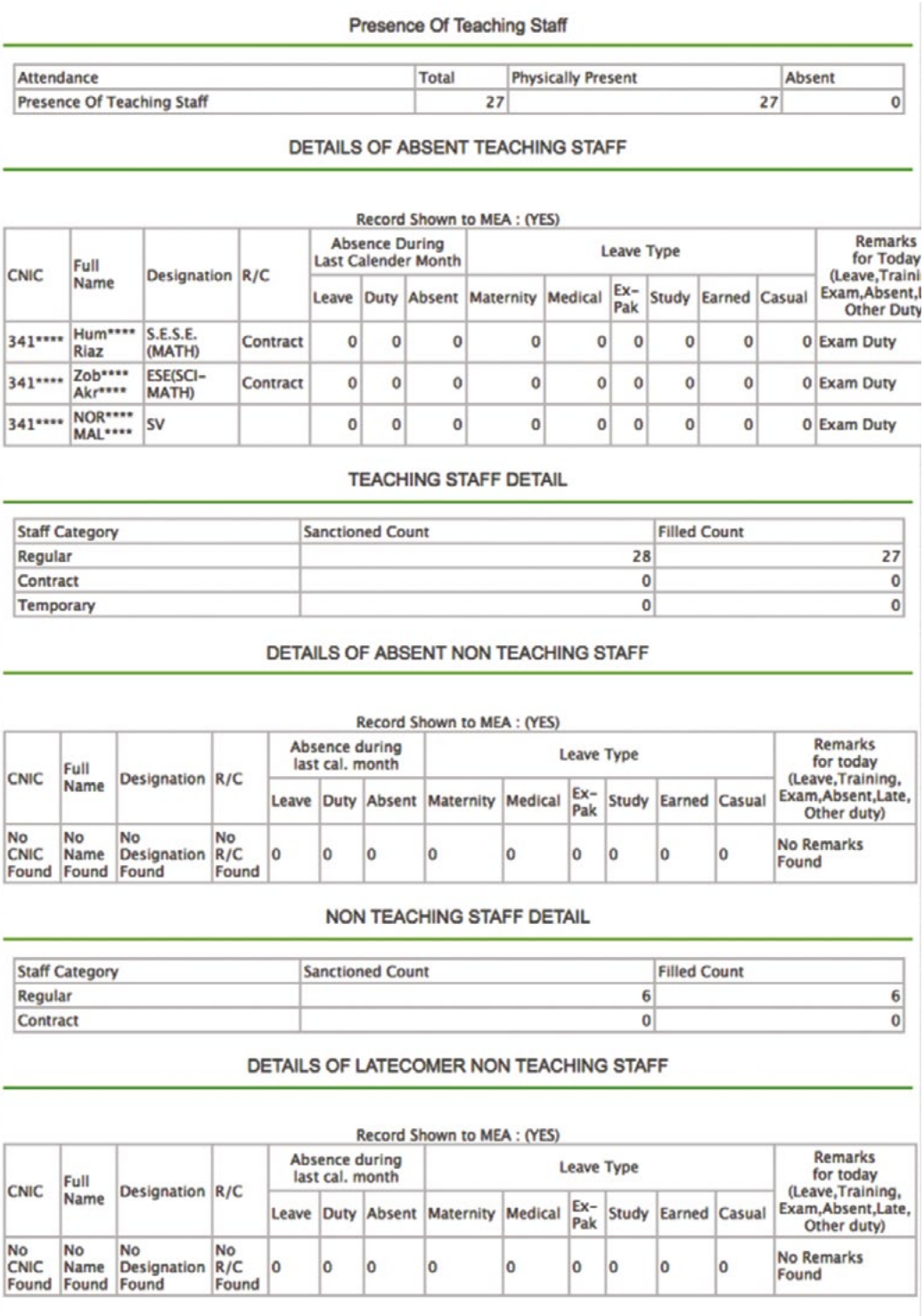
- Stipend provided to female students in high schools
- School finances (non-salary budget)

The performance of any school, district, or *tehsil* (administrative sub-division of a district) against each indicator can be viewed on the PMIU database. Each indicator is further broken down when the MEA visits schools to collect information. The checklist of indicators to measure takes the form of a monthly pro forma that is filled in by every MEA digitally, using a tablet. *Figure 4* shows how, for example, teacher presence is recorded using a pro forma, which can be understood as a school report card measuring different indicators, by an MEA on a school visit.

A detailed system of monitoring such as this provides a snapshot of the state of affairs of every public school located in any corner of Punjab. For example, teacher absenteeism has been cited as one of the most critical issues in all districts of Punjab. Using the pro forma shown in *Figure 4*, the PMIU enables the identification of individuals whose attendance is irregular. The names of these employees are forwarded to district education managers on a monthly basis for possible disciplinary action. In the past, absentees have received minor penalties, but prolonged absences have resulted in more serious sanctions, such as dismissal from service.

The PMIU dashboard gives the public an opportunity to engage with data and share their opinions regarding content through a feedback channel on the website. Moreover, for users interested in data for particular purposes, such as a research study, corporate analysis, or thesis, the PMIU offers the option of submitting a 'data request form' (*Figure 5*). While the feedback options are limited, they have, however, paved the way for a more active and immediate feedback system through the creation of the Education Hotline, which will be discussed later in this report.

Figure 4. Monthly monitoring pro forma filled out by an MEA to measure teacher and non-teacher presence in a school in Gujranwala



Presence Of Teaching Staff

Attendance	Total	Physically Present	Absent
Presence Of Teaching Staff	27	27	0

DETAILS OF ABSENT TEACHING STAFF

Record Shown to MEA : (YES)

CNIC	Full Name	Designation	R/C	Absence During Last Calender Month			Leave Type						Remarks for Today (Leave,Traini Exam,Absent,I Other Duty
				Leave	Duty	Absent	Maternity	Medical	Ex-Pak	Study	Earned	Casual	
341****	Hum**** Riaz	S.E.S.E. (MATH)	Contract	0	0	0	0	0	0	0	0	0	Exam Duty
341****	Zob**** Akr****	ESE(SCI-MATH)	Contract	0	0	0	0	0	0	0	0	0	Exam Duty
341****	NOR**** MAL****	SV		0	0	0	0	0	0	0	0	0	Exam Duty

TEACHING STAFF DETAIL

Staff Category	Sanctioned Count	Filled Count
Regular	28	27
Contract	0	0
Temporary	0	0

DETAILS OF ABSENT NON TEACHING STAFF

Record Shown to MEA : (YES)

CNIC	Full Name	Designation	R/C	Absence during last cal. month			Leave Type						Remarks for today (Leave,Training, Exam,Absent,Late, Other duty)
				Leave	Duty	Absent	Maternity	Medical	Ex-Pak	Study	Earned	Casual	
No CNIC Found	No Name Found	No Designation Found	No R/C Found	0	0	0	0	0	0	0	0	0	No Remarks Found

NON TEACHING STAFF DETAIL

Staff Category	Sanctioned Count	Filled Count
Regular	6	6
Contract	0	0

DETAILS OF LATECOMER NON TEACHING STAFF

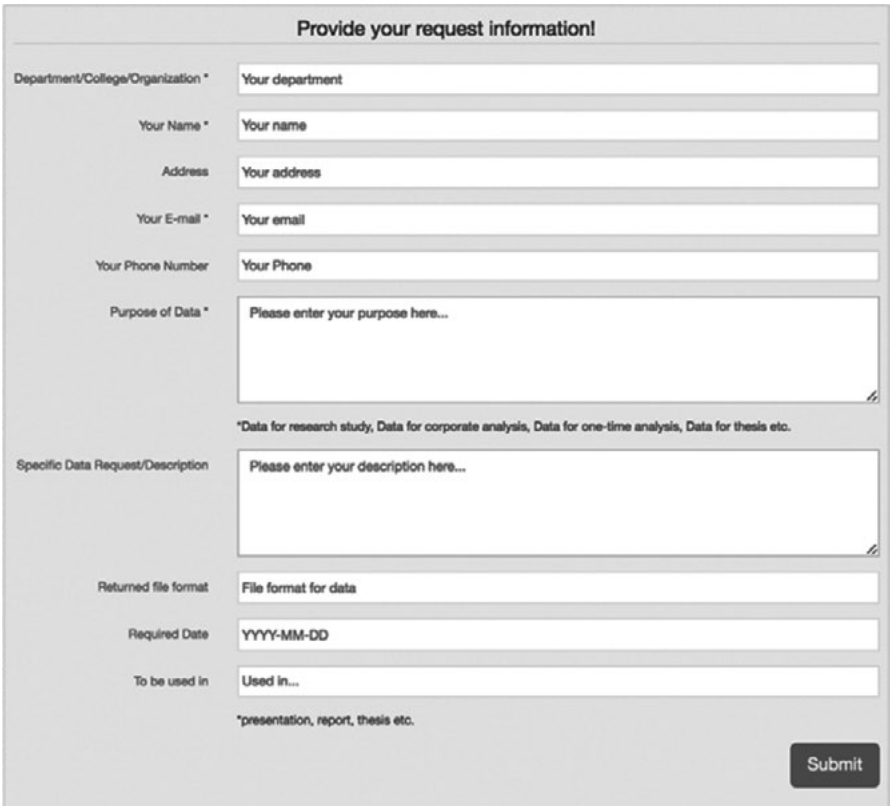
Record Shown to MEA : (YES)

CNIC	Full Name	Designation	R/C	Absence during last cal. month			Leave Type						Remarks for today (Leave,Training, Exam,Absent,Late, Other duty)
				Leave	Duty	Absent	Maternity	Medical	Ex-Pak	Study	Earned	Casual	
No CNIC Found	No Name Found	No Designation Found	No R/C Found	0	0	0	0	0	0	0	0	0	No Remarks Found

2.2 How the PMIU collects data

Following the inception of the PMIU in 2005, MEAs filled out extensive paper-based survey forms to collect data in public schools. This system was inefficient as it made tabulation and standardization of results a long, arduous process. In August 2014, the PMIU and the SED worked with PITB to develop an android application for efficient data collection. Now, using hand-held SIM-enabled tablets, MEAs can submit forms digitally and on a real-time

Figure 5. Data request form available on the PMIU website for users who need more details on a particular data set



basis. This system allows instant reporting with pictorial evidence, geo-tagging of sites visited, and automatic SMS alerts on below-target performance. Provincial and district-level summaries are generated automatically based on data from forms submitted by the monitoring officers. This measure has helped reduce data-entry time and has made data acquisition less prone to error through built-in validation checks. Real-time data generate updates to a centralized dashboard that offers access to consolidated information for timely trend analysis and decision-making.

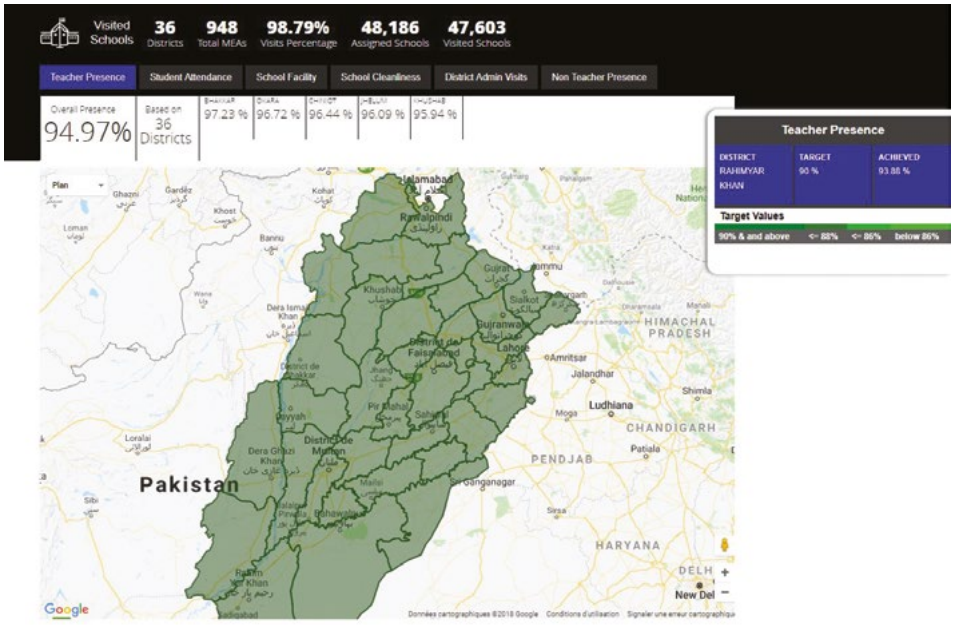
To eliminate any bias in the results and to discourage collusion with school staff, the PMIU shuffles the school allocation schedules of each MEA every month. The number of MEAs in each district is proportionate to its number of schools, but 'school clusters' are assigned in such a way that each MEA is able to visit four schools a day. At least 90 per cent of schools in the district have to be covered by MEAs each month. Additionally, the PMIU regularly communicates with its field staff to ensure adherence to assigned schedules. The SED is able to use the digitized monitoring system to identify which MEA performed a particular spot visit, making field monitoring staff more accountable for the data that are submitted. The performance of each MEA is evaluated by the district monitoring officer in charge.

In addition to cross-checks across the two databases and triangulation of data, third-party validations (TPVs) have been institutionalized in the monitoring process under the aegis of the PMIU. To date, seven TPVs have been carried out to test the validity of data on monthly monitoring, enrolment, provision of missing facilities, financial details, and free textbooks. Furthermore, random calls made to schools and districts by the UK Department for International Development (DfID) found that the data being collected by the PMIU were reliable and efficient.

2.3 The PMIU as a tool of comparison

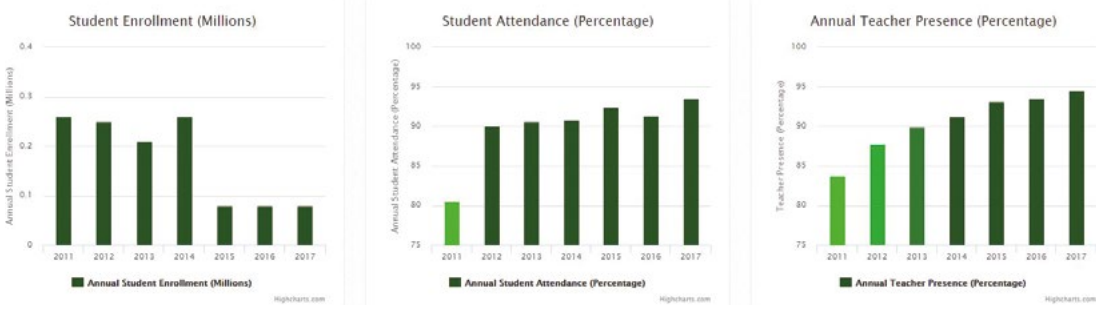
The easy-to-use interface of the PMIU allows for comparison of the performance of each district on each key indicator. Details, such as the names of poorly performing schools and teachers, can be obtained. This tool is extremely beneficial at a provincial level, as it allows quick and efficient measurement of progress and highlights areas that need attention from a decision-making perspective. The PMIU creates 'heat maps', which divide districts within Punjab into three different shades of green, based on how they meet optimal-performance targets statistically. A performance of 90 per cent and above on any indicator results in dark green, 88 per cent to 86 per cent results in a neutral shade of green, while anything below 86 per cent results in a light green. A heat map of any month can be obtained by selecting the desired timeframe on the PMIU website (see *Figure* 6). This feature is used regularly by the chief minister and his team to assess the performance of the education system across the province. Such an approach draws attention to the continued underperformance of schools in the rural south of Punjab, and encourages reform programmes to come up with innovative solutions for these target areas.

Figure 6. A 'heat map' giving an overview of each district's performance in May 2017



Furthermore, the most recent performance of any school in a northern or southern district, whether rural or urban, can be viewed at the touch of a button. The PMIU automatically organizes each indicator's results for the year against previous years (see *Figure* 7).

Figure 7. Annual performance of Cantt, Lahore, on three indicators, 2011 to 2018



Current enrolment for any district or *tehsil* can also be compared to the enrolment target set for 2017, as seen in *Figure 8*.

Figure 8. Comparison of current enrolment in all districts of Punjab as compared to target enrolment

2.4 How PMIU data are accessed

The monthly monitoring data collected by MEAs is published online in real time on the PMIU website. The home page features a live feed on public schools, students, and teachers. This is used to rank districts and divisions on a quarterly and annual basis, based on their performance across education indicators. These data can be publicly accessed on the PMIU website (www.open.punjab.gov.pk/schools). Users can view the forms submitted by monitoring officers, see how the performance of any district compares to another, or assess progress against education outcomes in Punjab compared to targets set by the government. They can also subscribe for auto-alerts to get updates on data related to spot visits. Most importantly, the PMIU website allows users to engage with the data collection process by leaving their feedback whenever they visit the website. It encourages users to share any misreporting of data or data inconsistencies they observe as they navigate the database on the PMIU website (www.open.punjab.gov.pk/schools). Users can view the forms submitted by monitoring officers, see how the performance of any district compares to another, or assess progress against education outcomes in Punjab compared to targets set by the government. They can also subscribe for auto-alerts to get updates on data related to spot visits. Most importantly, the PMIU website allows users to engage with the data collection process by leaving their feedback whenever they visit the website. It encourages users to share any misreporting of data or data inconsistencies they observe as they navigate the database.

2.5 PMIU vs ASER

The Annual Status of Education Report (ASER) provides a useful opportunity to compare a government-led initiative, the PMIU, with a citizen-led initiative.

ASER is the largest citizen-led, household-based initiative aiming to provide reliable estimates on the schooling status of primary school-aged children residing in rural districts of Pakistan, mobilizing around 10,000 citizen volunteers annually.

ASER adopts a citizen-driven approach, in an effort to mobilize policy-makers as well as ordinary citizens to drive change in Pakistan's education policy. ASER involves ordinary citizens in the process of data collection, giving them an accessible tool for evidence-gathering and action. The idea is to create citizen pressure for holding the education system accountable for unsatisfactory delivery. The approach is predicated on the promotion of awareness of children's literacy and numeracy levels.

ASER undertakes the following activities each year:

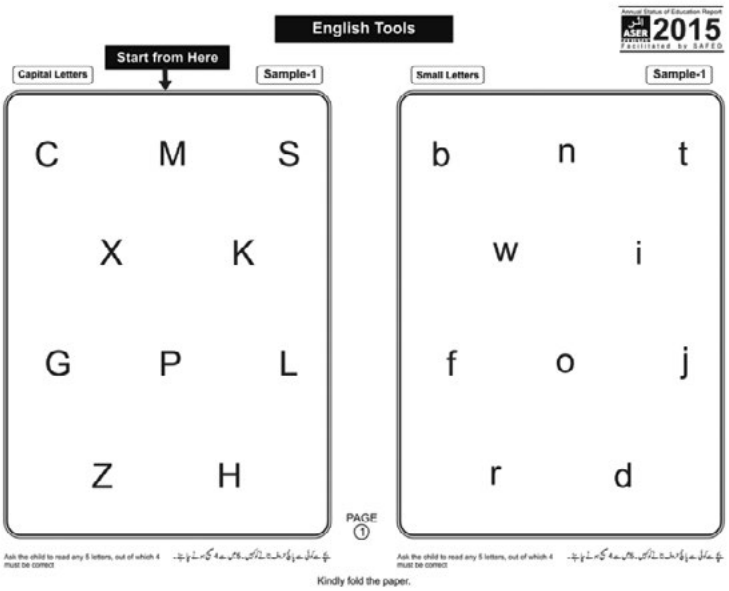
- a large household survey covering 138 districts in Pakistan;

- assessment of minimum levels of literacy and numeracy;
- mobilizing a volunteer-driven approach to conducting assessment;
- instant feedback of the assessment results to parents/guardians, children, and local leaders;
- communication of results across the country.

Each year, ASER collects data specific to children aged 5 to 16 on various education indicators, covering learning outcomes, access, and school facilities. It is active in 146 rural districts and a selected 21 urban districts across Pakistan, and provides data disaggregated by grade and gender on households, villages, districts, and provinces. For its rural sample, ASER surveys 600 households per district, further broken down into 20 households, one government authority, and one private school per village. For its urban sample, ASER uses primary sampling units, which are based on a 'probability proportional to size' method.

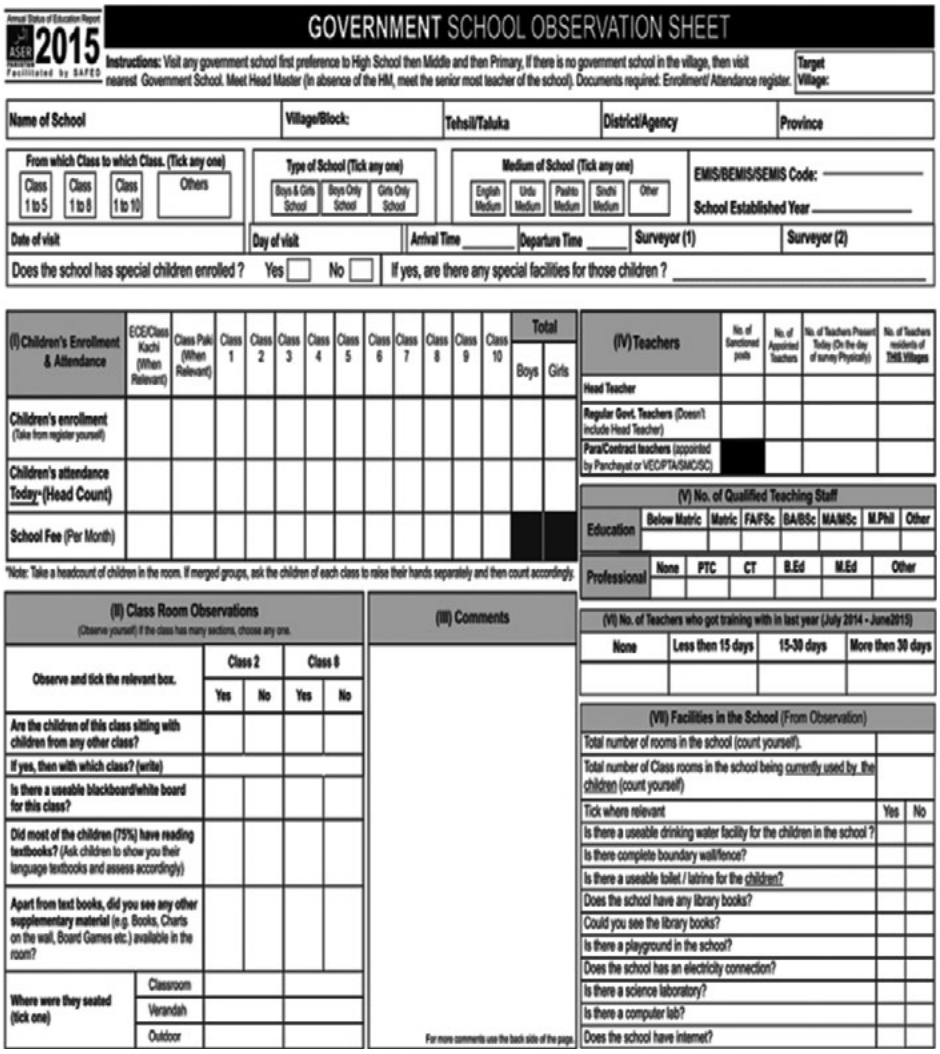
While the PMIU gives a complete picture of Punjab's public school system, ASER's indicators attempt to present a snapshot estimate of average learning levels across public and low-cost private schools in the country. This means that the children covered by the survey include those enrolled in government institutions, private schools, and *madrassas* (religious schools), as well as those who are not enrolled in school at all. Essentially, the question ASER aims to answer is whether 'children are learning'. ASER volunteers conduct two tests in language (Urdu, Sindhi, and Pashto), English, and arithmetic to test literacy and numeracy skills at Grade 2 and 3 level among primary school aged (ages 5–9) children. The answers are graded on five levels, where Level 1 means the child is not able to answer the question at all, and Level 5 indicates that the child was able to give a perfect answer. These tests are conducted at the homes of selected children, and after results are collected, instant feedback is provided to the community.

Figure 9. English assessment test used by ASER volunteers to measure student literacy in 2015



Each volunteer is given a survey booklet (*Figure 10*), which has a village information sheet, a household survey sheet, and a school data sheet. The school data sheet collects data on student enrolment, number of teachers, attendance levels of students and teachers, funding status, personal information about the head teacher, and classroom observations. ASER's data quality framework involves three phases: training, monitoring, and rechecks. Once errors have been filtered out, data are entered into in-house information management software.

Figure 10. School data sheet for public schools used by ASER volunteers



GOVERNMENT SCHOOL OBSERVATION SHEET

ASER 2015

Instructions: Visit any government school first preference to High School then Middle and then Primary. If there is no government school in the village, then visit nearest Government School. Meet Head Master (In absence of the HM, meet the senior most teacher of the school). Documents required: Enrollment/ Attendance register.

Target Village:

Name of School | Village/Block: | Tehsil/Taluka | District/Agency | Province

From which Class to which Class. (Tick any one): Class 1 to 5 | Class 1 to 8 | Class 1 to 10 | Others

Type of School (Tick any one): Boys & Girls School | Boys Only School | Girls Only School

Medium of School (Tick any one): English Medium | Urdu Medium | Pashto Medium | Sindhi Medium | Other

EMIS/BEMIS/SEMIS Code: _____

School Established Year _____

Date of visit | Day of visit | Arrival Time _____ | Departure Time _____ | Surveyor (1) | Surveyor (2)

Does the school has special children enrolled ? Yes ☐ No ☐ | If yes, are there any special facilities for those children ? _____

(I) Children's Enrollment & Attendance

	ECE/Class Kachi (When Relevant)	Class Pak (When Relevant)	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Total Boys	Total Girls
Children's enrollment (Take from register yourself)														
Children's attendance Today (Head Count)														
School Fee (Per Month)														

*Note: Take a headcount of children in the room. If merged groups, ask the children of each class to raise their hands separately and then count accordingly.

(II) Class Room Observations (Observe yourself) If the class has many sections, choose any one.

Observe and tick the relevant box.	Class 2 Yes	Class 2 No	Class 8 Yes	Class 8 No
Are the children of this class sitting with children from any other class?				
If yes, then with which class? (write)				
Is there a useable blackboard/white board for this class?				
Did most of the children (75%) have reading textbooks? (Ask children to show you their language textbooks and assess accordingly)				
Apart from text books, did you see any other supplementary material (e.g. Books, Charts on the wall, Board Games etc.) available in the room?				
Where were they seated (tick one) — Classroom				
Verandah				
Outdoor				

(III) Comments

For more comments use the back side of the page.

(IV) Teachers

	No. of Sanctioned posts	No. of Appointed Teachers	No. of Teachers Present Today (On the day of survey Physically)	No. of Teachers residents of THIS Village
Head Teacher				
Regular Govt. Teachers (Doesn't include Head Teacher)				
Para/Contract teachers (appointed by Panchayat or VEC/PTA/SMC/SC)				

(V) No. of Qualified Teaching Staff

	Below Matric	Matric	FA/FSc	BA/BSc	MA/MSc	M.Phil	Other
Education							

	None	PTC	CT	B.Ed	M.Ed	Other
Professional						

(VI) No. of Teachers who got training with in last year (July 2014 - June2015)

None	Less then 15 days	15-30 days	More then 30 days

(VII) Facilities in the School (From Observation)

Total number of rooms in the school (count yourself).	
Total number of Class rooms in the school being currently used by the children (count yourself)	

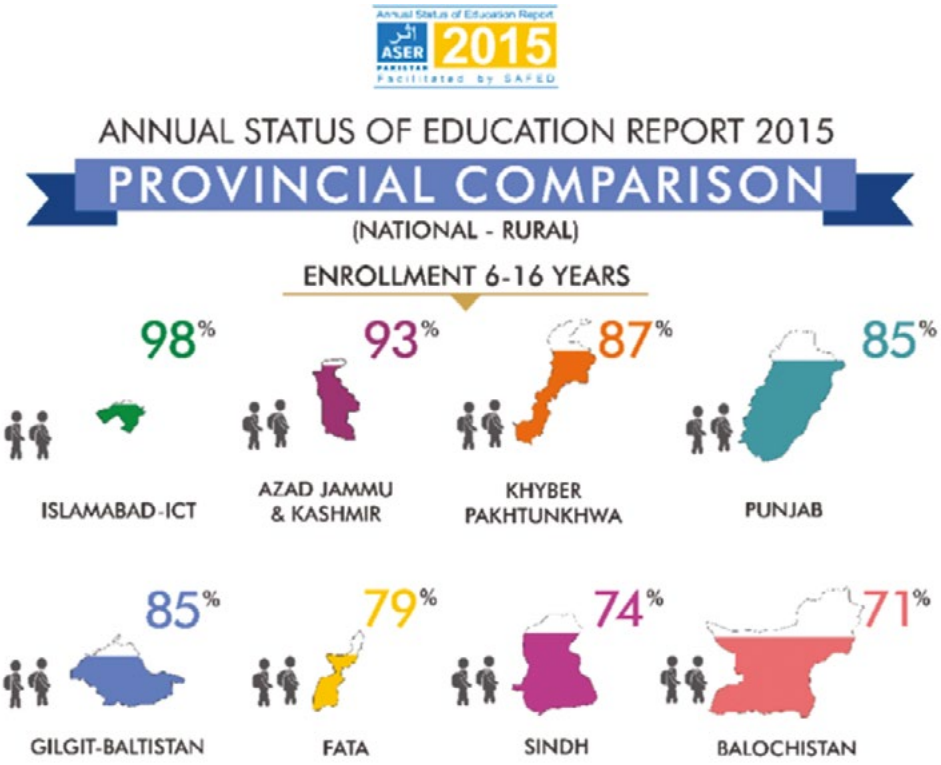
Tick where relevant	Yes	No
Is there a useable drinking water facility for the children in the school ?		
Is there complete boundary wall/fence?		
Is there a useable toilet / latrine for the children?		
Does the school have any library books?		
Could you see the library books?		
Is there a playground in the school?		
Does the school has an electricity connection?		
Is there a science laboratory?		
Is there a computer lab?		
Does the school have internet?		

Using the data collected, a report card is created each year by ASER, which allows for comparison of education standards across gender, district, and provinces (*Figure 11*).

Unlike the PMIU, however, data collected by ASER are not published on a real-time online platform. Enumerators give households immediate feedback regarding the test performance of the children. Once results are collected, village *baithaks* (open air gatherings) are organized so teachers, parents, and government field officers can discuss the status of education. ASER publishes the final report and district report cards in English, hosts report launches, and organizes regular policy dialogues and seminars to share its results with officials at district and provincial level. The reports present data on selected aspects concerning schools, school participation, and competency levels of children in basic literacy and numeracy, according to gender, classes, and types of school, i.e. public or private. ASER uses the Probability Proportional to Size Sampling technique. This method gives areas with larger populations a higher chance of being selected in the sample. It does not take socio-economic differences into account but instead focuses on the learning levels of students from the selected sample. ASER thereafter develops communications that use this evidence as a means of creating general awareness and spurring conversations and actions among varied audiences.

Once data for all the areas are collected, they are made available on the ASER website, from which they can be downloaded. Even though ASER's results give a less detailed analysis of Punjab's education sector than the PMIU, the data collected quickly gain traction through

Figure 11. An excerpt from ASER 2015, in which Punjab was ranked fourth in terms of enrolment compared to other provinces



the active engagement of the media. It is featured in newspapers, television campaigns, and social media, which is how it has solidified its place as a key mechanism of accountability. As they enable comparison between districts and provinces, ASER results are front-page news and are viewed as an important part of the overall picture of the state of education in Pakistan.

While ASER is interesting as an example of a prominent, ostensibly citizen-led movement that is increasing state accountability for delivery of public services, it is not an entirely relevant case for our study. First, ASER's data are household-level data and not school-level data. Hence, triangulation of data or any kind of attribution to variables will be difficult and ambiguous. Second, the data uncovered by ASER are intended not for mass consumption, but to influence policy. The reports are published online, but the raw data are not readily available. Their purpose is to influence policy rather than to promote data transparency or citizen-led activity.

The PMIU remains the only education database that operates in such an in-depth way, with data collection carried out by government-trained officers who cover every school in Punjab on a regular basis. The reason for including ASER in this report, as an example of a citizen-led initiative, is to raise the following questions, which will be covered in the sections that follow, particularly in the surveys and interviews of different stakeholders.

- What are the merits of platforms such as open-air gatherings in a village or district to discuss information on the status of education, as opposed to publishing data online?
- Why are data generated by citizens deemed more credible, or 'newsworthy', than information collected by a government-led initiative such as the PMIU?
- Do the PMIU's indicators present an accurate picture of education in Punjab, or do ASER's indicators represent a model to be learned from?
- How important is the involvement of citizens in any effort that aims to promote transparency and accountability in the education landscape of Punjab?

Table 2. ASER and PMIU comparison

	Content	Data sources	Comparisons	Format	Access
PMIU	Measures core indicators, retention indicators, monitoring and management indicators, infrastructure indicators, and financial indicators, all of which combine to make a school report card for public schools in Punjab.	Forms submitted by MEAs using hand-held SIM-enabled tablets. These forms allow reporting on a real-time basis, with pictorial evidence, geo-tagging of sites visited, and automatic SMS alerts on below-target performance.	The PMIU allows a comparison of the performance of each district against others in Punjab across any indicator, using heat maps. The annual performance of any school – rural or urban, north or south – can be compared to its past performance, on a holistic basis as well as across specific indicators. Performance against these indicators can also be compared to targets set by the government for the year to assess how much work needs to be done and in which areas.	Based on how each district performs, the PMIU publishes a ranking on a quarterly and annual basis, highlighting both the best- and the worst-performing districts. Additionally, the home page of the website features a live feed that tracks data such as the number of schools and the number of teachers and students at these schools. School report cards and data relevant to education in the province are updated every month, when an MEA visits the school.	Monthly monitoring data collected by MEAs, including the forms they fill out in their evaluation of a school, can be accessed online on the PMIU database.
ASER	Measures indicators that reflect how well students are learning, such as student enrolment, number of teachers, attendance levels of both students and teachers, funding status, personal information about the head teacher, and classroom observations.	The primary data sources used by ASER volunteers are tests in language (Urdu, Sindhi, and Pashto), English, and arithmetic to assess the literacy and numeracy skills of primary school-aged children. Additionally, these volunteers fill out survey booklets that contain a village information sheet, a household survey sheet, and a school data sheet.	Based on the data that are collected by the volunteers, ASER creates a report card that enables comparison of education standards in terms of gender, districts, and provinces.	As the name suggests, ASER conducts and publishes household surveys on an annual basis. This helps identify trends in the education landscape and to track how they evolve over time.	Results of ASER tools are shared directly with community members as soon as they are collected by volunteers. In addition to this system of immediate feedback, ASER publishes a yearly report, as well as specific district reports, online, available for download by the public.

3. Analysis of the accountability model

3.1 How the PMIU drives accountability

In order to understand how the data collected by the PMIU are used to drive service delivery, improve accountability, and encourage evidence-based decision-making, it is important to examine the hierarchies that comprise the bureaucratic structure for education.

Education in Punjab comes under the School Education Department (SED), which is led by the education secretary, aided by four additional secretaries with more specific remits. The SED executes its functions through its staff in all 36 districts of the province. Each district has a district education authority (DEA) headed by a chief executive officer (CEO), who implements and monitors education activities, controls budgets, and supervises institutions and staff within the district. Each CEO has three district education officers (DEOs) to assist with these functions. Deputy DEOs (DDEOs) are deployed on the *tehsil* level– each district has between two and five *tehsils* and each *tehsil* has two DDEOs, one for each wing, i.e. male and female. They are supported by assistant education officers (AEOs) at a *markaz* (a sub-division of the *tehsil*) level, and each *markaz* has 10–12 schools.

Supporting bodies include the Directorate of Staff Development (DSD), which is responsible for the professional development of primary school teachers working in public schools. This training is carried out by district training and support centres (DTSCs) in all 36 districts of Punjab, where teacher educators (TEs) and district teacher educators (DTEs) are responsible for mentoring and coaching teachers in their respective districts. The PMIU is an autonomous department working under the SED to closely monitor the entire range of activities across public service delivery. It collects data on the performance of schools in each district against a set of indicators including teacher presence and student attendance, availability of basic facilities, and administrative supervision. Each district has one district monitoring officer (DMO) who supervises the MEAs in their collection of granular-level data across all 36 districts of Punjab. A summary of these roles is given in *Figure 12* and *Figure 13*.

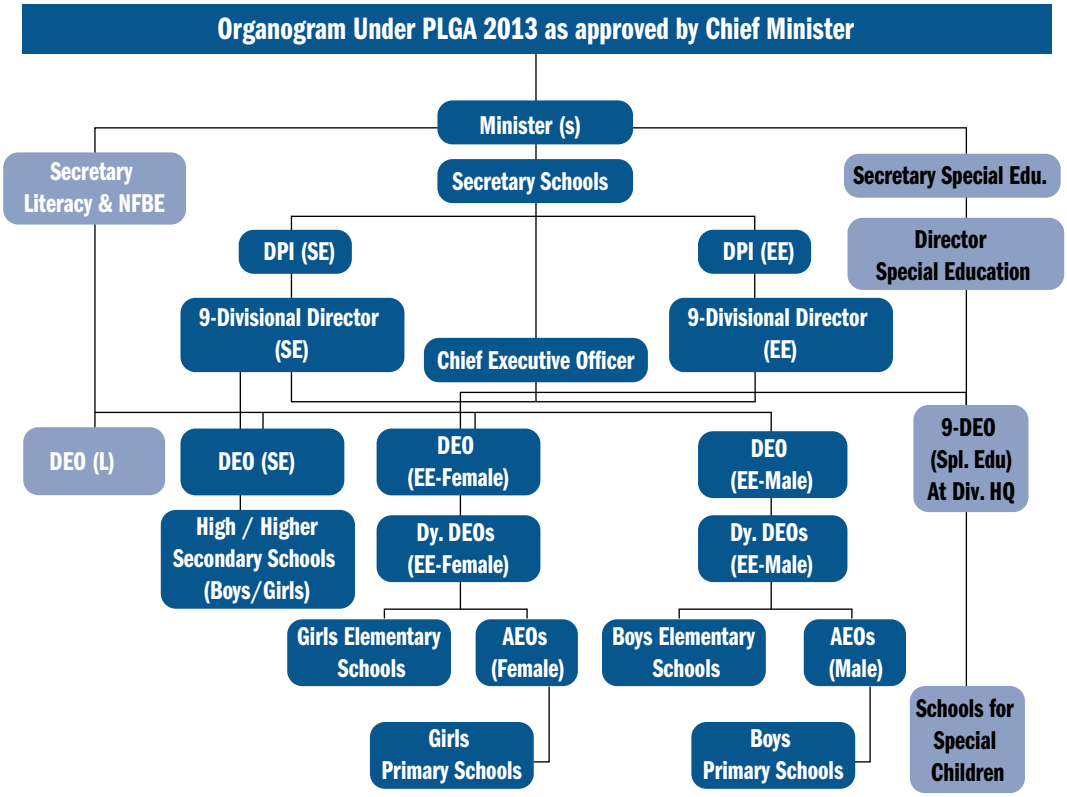
3.2 Comparison of areas of accountability

Through the data generated by the PMIU, performance at district and *tehsil* levels becomes directly available to the higher-tier provincial government. Pressure is put on low-performing officials to take responsibility and improve performance.

Performance management framework: The information collected by the PMIU is used as a performance management tool to cultivate accountability at district and provincial levels through PreDRC and DRC meetings, CEO conferences and stocktaking forums. By measuring the performance of a school against a comprehensive set of indicators, an overall picture of basic educational facilities and functioning is obtained. These indicators cover aspects of management, such as student and teacher attendance, provision of drinking water, electricity, and student–teacher ratios. Once the information collected by MEAs reaches the central servers, data from the previous month's indicators are generated in the form of a report, the 'district datapack'. These reports are a means of evaluating the performance of various tiers of district education management. Traffic lights (red, amber, and green) and colour-coding are used to enhance the descriptive power of the data. On the basis of these results, top-tier district managers (district commissioner [DC] and CEO) hold their middle and low-tier managers (DEOs, DDEOs, and AEOs) to account. The datapack has separate sections outlining the performance of all tiers of administration at the district level, including:

1. DC: district-level performance
2. CEO (education): district-level performance
3. DEO (women's elementary education): district-level performance
4. DEO (men's elementary education): district-level performance
5. DDEO (women's elementary education): *tehsil*-level performance
6. DDEO (men's elementary education): *tehsil*-level performance
7. AEO (women's elementary education): *markaz*- and school-level performance
8. AEO (men's elementary education): *markaz*- and school-level performance

Figure 12. The bureaucratic structure of education in Punjab



These datapacks are used to drive local accountability. At district level, a PreDRC meeting is held during the first half of the month, led by the CEO. At these meetings, datapacks are issued to discuss the performance of schools at different levels of hierarchy, so 'SMART' actions can be taken to improve conditions in schools. The availability of funds is highlighted in the datapacks to encourage head teachers to utilize these funds to improve school facilities. However, holding teachers accountable for the misuse of these funds is not part of the mandate of PreDRC meetings. The first indicator discussed in these datapacks is 'teacher presence' and every administrator reiterates that teachers must be present in school. This explains why teacher presence has not dropped below 90 per cent in Punjab. If a teacher is found absent, he or she will be fined or will face another form of sanction, including removal from service, termination of contract, or stoppage of increment. For this reason, teachers attach importance to the visits of monitors to their schools.

The monthly reports and performances of each manager are evaluated in the PreDRC meeting and remedial measures are planned to improve against low-performing indicators. The meeting results in a comprehensive action plan for AEOs to implement in their respective schools. AEOs are meant to visit their assigned school once a month. During that visit, AEOs mentor low-performing teachers and penalize habitual offenders

according to the Punjab Employees Efficiency, Discipline and Accountability (PEEDA) Act. During the second half of every month, a district review committee (DRC) meeting is held. It is led by the DC and follows up on decisions made during the PreDRC. Each manager explains the challenges in their respective areas of responsibility and details the actions taken to improve performance. In this way, schools that score low on indicators are given a time period in which to make amends and meet the standard of education demanded by the provincial government. An example of this system of accountability working successfully can be seen in *Figure 14*, which describes the dramatic change in Sargodha's student attendance; regular follow-ups and checks improved the attendance rate from 74 per cent in 2011 to 91 per cent in 2016.

Figure 13. The district bureaucratic structure for education in Punjab

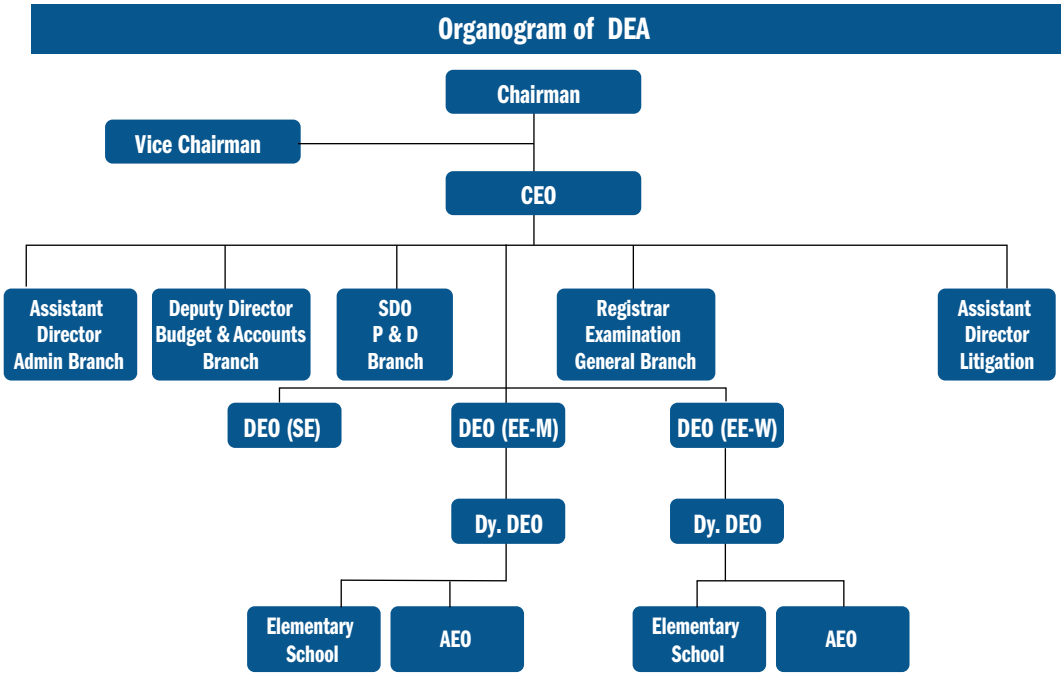
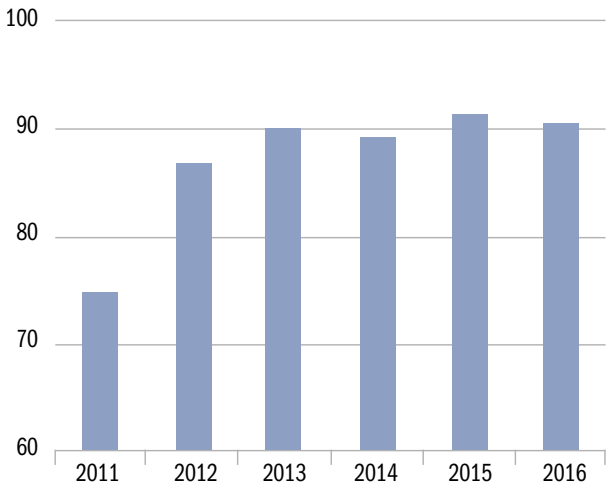


Figure 14. Sargodha's student attendance, 2011 to 2017 (percentage)



The PMIU, which is responsible for data collection and analysis, answers to the Secretary for Schools but there is an entirely separate line of accountability for those responsible for delivering the outcomes. The appointment of CEOs is based on merit, and they are trained to achieve targets set by the reform roadmap (a Punjab Education Sector Programme [PESP] intervention). They are responsible for managing human resources, evaluating their districts, and initiating change where required. Using a monthly datapack, the PMIU is able to reveal how each district fares against other districts in Punjab on each key indicator, including specifics such as the names of under-performing schools and head teachers.

At the provincial level, education sector performance is reviewed on a monthly basis at the CEO conference, chaired by the education secretary, in which CEOs from all 36 districts and the heads of key institutions (PMIU, Punjab Examination Commission (PEC), and DSD) participate. Here, district rankings are shared and progress is displayed against the indicators measured by the PMIU. Another accountability mechanism takes the form of stocktaking meetings held every two months with key education stakeholders and the chief minister. They were proposed by the UK-based educationist, Michael Barber, during his work in Punjab to create a two-way feedback loop to provide regulatory checks and to inspire better performance by all tiers of the education bureaucracy. At these stocktakes, the secretary for schools and the entire team in charge of the province's education performance meet to evaluate work to date and the way forward (Barber, 2013). Using infographics, heat maps, and presentations, the data collected by the PMIU tracking the performance of each district are assessed publicly

Figure 15. Performance across indicators colour-coded as shown to the chief minister at the February 2017 stocktake.

Performance on Roadmap Traffic lights under core priorities for the Roadmap

On track / Off track / No action / unknown

Indicators	On Track	Amber Green	Amber Red	Off Track	Yet to initiate	Amber Red/ Off Track Detail
Schools and teachers	3	3	0	3	1	▪ SED classrooms ▪ DFID classrooms ▪ Electrification of schools
Teaching quality	13	4	1	0	0	▪ AEO recruitment
Public private cooperation	6	3	0	0	0	
Enrolment and access	6	2	0	0	0	
TOTAL	28	12	1	3	1	

Pedagogical accountability

The Literacy and Numeracy Drive (LND) is a test conducted every month by MEAs to provide the provincial government with a snapshot of student literacy and numeracy levels for each primary school in the province. Six randomly selected Grade 3 students

from every school in Punjab are tested on a subset of Grade 2 English, maths, and Urdu Student Learning Objectives (SLOs) used in a six-monthly assessment. LND data are collected and communicated to the secretary of education, who is able to identify areas that need teaching and administrative support from AEOs and DTEs. This is how strategic support is provided to teachers through results brought in by the PMIU, and policies are informed to improve student learning outcomes. The secretary of education follows up with the CEOs of low-performing districts by publicly identifying them and directing them to improve performance. The districts rated 'good' in terms of performance are given recognition in the CEO conference. CEOs review the monthly performance of districts and pay special attention to investigating reasons for low performance. They discuss the problems of low-performing districts with cluster training and support centre heads, who share these results with DTEs. Support and coaching are provided to teachers accordingly. AEOs are also instructed to visit low-scoring schools and to provide refresher courses to students. Since the LND is conducted on a monthly basis, school heads and teachers are obliged to acknowledge the importance of focusing on basic literacy and numeracy skills, and this, in turn, motivates them to focus on improving these skills among their students. This is how an effective system of checks and balances, in which quality is maintained and pedagogical accountability fostered, is cultivated.

Management accountability

On a district level, schools do not have control over the hiring and firing of staff. However, the head teacher has a policing role and can report the absence of a teacher or any other complaint concerning management. The final action is taken by the DEO.

Financial accountability

Public schools do have financial accountability through non-salary budget (NSB) data collected by MEAs every month. The NSB was introduced in 2013/14 to promote school autonomy and enhance the role of school management in school-based planning and budgeting. The scheme introduced needs-based criteria for the allocation of funds to schools for their operational expenses and improved learning environment. The purpose of the initiative is to provide autonomy to schools to determine their own needs and set spending priorities. By the financial year of 2015/16, all 36 districts of Punjab received the NSB budget and 14 billion rupees were allocated under this scheme. Each school receives a sufficient amount for day-to-day affairs, and this amount is transferred by the PMIU to schools on a quarterly basis. The data from which the NSB allocation to a particular school and district is calculated come from the PMIU and cover areas such as student enrolment, teacher numbers, and facilities. The PMIU collects data every month on the utilization of the NSB budget and contributes to accountability (i) at central level by sharing district-level progress with the schools secretary to expedite utilization, and (ii) at district and school levels through field monitors inspecting financial transaction and the procurement of goods each month.

A review of the NSB scheme's success, undertaken by the School Education Department with the support of the Punjab Education Sector Programme 2 (PESP-2) and the Institute of Social and Policy Sciences (I-SAPS), showed that the scheme was contributing to its intended objectives. However, some areas need improvement, such as NSB allocation, release, utilization, and record-keeping processes for targeted schools. The review recommended using real-time data collected by the MEA for the calculation of each school's NSB entitlements, as well as a 'needs survey' to be conducted by the PMIU to revise the weights used to calculate NSB allocations.

3.3 Comparison of models of accountability

Punjab's education bureaucracy applies a mix of several accountability models.

Formal sanctions and rewards model (stocktakes):

Using the data collected by the PMIU, a district ranking is produced every quarter, identifying top performers, who earn financial rewards, and poor performers, who, if necessary, can be removed. The use of heat maps at the stocktakes makes performance in different areas of Punjab evident and public. Subsequently, formal recognition is given to CEOs at the top of the quarter's rankings. An invitation to tea with the chief minister is a highlight of this programme. CEOs who are unable to meet the targets set by the provincial government face a range of measures, such as being publicly interrogated and made accountable for poor results by the chief minister.

Public-participation model (school councils):

The effective governance of local public services needs to be supported by informed citizen participation. The benefits of a model in which citizens play a direct role in the implementation of education policies include the possibility of tailoring public services to the unique needs of particular communities, improving targeting, and increasing demand for good governance. The Government of Punjab established school councils (SCs) in 1994 in both primary and middle schools as part of province-wide school-based management reforms. These SCs comprise a head teacher (or principal) who serves as chairperson and 7–15 elected members, including parents (at least 50 per cent of the SC membership), and notable individuals from the community, such as shopkeepers. The School Council Policy 2007 requires SC members to meet monthly, keep records of their meetings, and ensure two-thirds of members attend them. Members are also responsible for monitoring teacher, staff, and student attendance, making efforts to increase enrolment, reducing drop-out, monitoring and assisting the provision of textbooks, hiring temporary teachers and staff, managing the SC fund, planning infrastructural development, and keeping records of all transactions.

In order to build on the momentum of the work of the SCs, the government launched the School Council Mobilization Programme (SCMP) as part of the Punjab Education Sector Reform Programme (PESRP). This project focused on providing sustained and targeted guidance to school council members on their civic responsibilities through low-cost engagement via mobile phones. In phase one, each call involved an agent providing scripted information to the SCs on one area of responsibility, but the scripts did not specifically address how those tasks could be achieved. During some calls, SCs were also asked to give their feedback on the current state of school management for their respective schools.

In phase two of the programme, the order and content of the scripts were modified in response to feedback from the field and from centrally monitored process data. The new phase also emphasized the enrolment campaign to meet the Millennium Development Goal of achieving universal primary education, and statistics regarding out-of-school children in the district and province. By providing sustained and one-to-one communication between representatives of the provincial government and members of the SCs, this programme was able to increase student enrolment and teacher attendance in primary schools. Periods of direct engagement between the call centre and council members had the greatest impact on results. The SCMP is an example of a successful public-participation model, where accountability is generated by giving members of the community and direct stakeholders a role to play in school monitoring.

The provincial government has taken steps to foster the rights of citizens by creating a school Education Hotline in conjunction with the PESP-2. The School Education

Department piloted this hotline from November 2016 to January 2017 in Lahore and Bahawalpur, where results were very encouraging. Since then, the hotline has been introduced in two more districts – Rawalpindi and Sargodha. The Education Hotline is a dedicated phone number for parents, teachers, students, and the general community to provide feedback on public school issues, lodge a specific school complaint, or obtain information on education-related topics. Of the 186 complaints that were registered during the pilot phase, the top three complaint categories were: i) non-functioning facilities (e.g. no drinking water or electricity); ii) teacher behaviour (e.g. late arrivals, disengaged attitude in class); and iii) teacher insufficiency (e.g. high student–teacher ratio, teacher unavailable). The hotline aims to record these complaints, notify relevant authorities, and resolve them. The success of the pilot in terms of reporting and addressing complaints encouraged the government to scale it up as an active tool in all 36 districts of Punjab by September 2017. In order to increase district ownership, user-friendly dashboards have been created that can be used for reporting by anyone from AEOs, who are responsible for complaints at a primary level of education at the chief minister's stocktake. These reporting dashboards provide a summary of complaint resolution to officials in every district, as well as details of each complaint, including complaint type, school name, and resolution deadline. CEOs of districts are instructed to review the dashboards on a daily basis to resolve complaints as they are recorded. SMS alerts have been introduced, which notify the relevant AEO, DEO, DDEO, and/or the district supervisor every time a caller records a complaint specific to a particular school. Target timelines are set according to the nature of each complaint, and text reminders are sent to relevant officials to ensure resolution of the problem. The hotline will ultimately strengthen the PMIU's capacity to orchestrate and drive the complaint redressal process. It will monitor the performance of district officials on hotline complaint resolution and thereby increase accountability.

Public–private partnership (PPP) model:

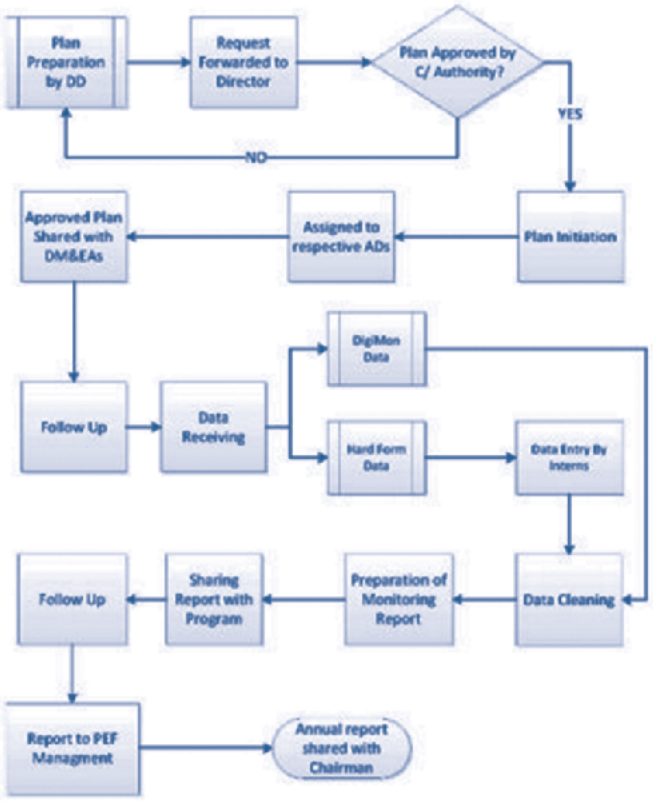
The Punjab Education Foundation (PEF) acts as a semi-autonomous statutory body under the SED to encourage and promote education on a non-commercial/non-profit basis. Through the country's largest public–private partnership, PEF supports the efforts of the private sector in providing free and quality education to the poor. This is done through technical assistance in the form of teacher training and professional development for privately managed schools, supporting schools in less affluent areas, offering education vouchers to households in *katchi abadis* (squatter settlements), and allocating monetary awards to high-performing PEF institutions. Even though the organization operates independently, all functions performed are approved by the government, and the chief minister takes an active role in supporting the organization's activities and expanding them.

The goals of the PEF are meant to align with the work of the education sector roadmap and the PESP-2, particularly in terms of increasing access and outreach. PEF's monitoring and evaluation department works to oversee implementation of all programmes, to provide information on performance to management, and to use checks and balances to maintain accountability (see *Figure 16*). By conveying information directly to the board of directors, PEF enables senior management to make decisions with respect to changes in the programme. This is how it supports substantive accountability and programme restructuring, informed decision-making, and enhancement in organizational and development learning. In addition to monitoring the various activities conducted at PEF, the monitoring and evaluation department maintains efficient and effective redressal of complaints through the centralized complaint cell.

As it sits outside the formal bureaucracy, PEF can act as an alternative to the public sector. It is not limited by the civil sector and its regulations, and is able to utilize the skills and flexibility of the private sector to provide education to the children of poor families. The competition effect of the private schools sector generates accountability; and success

here puts pressure on the government sector to reform itself. However, the relationship between PEF and the government remains amiable and one of mutual support; the chief minister has accredited PEF for the enrolment of a total of 2.8 million children from disenfranchised communities in its partner schools by 2018. Evidence shows that low-cost private sector schools in Pakistan outperform government schools, even though this does not mean they are good. What it does show is that, in Punjab, universal primary education cannot be attained unless the private sector is taken into account, which is why the additional accountability and progress generated through initiatives such as PEF become critical.

Figure 16. Chain of accountability led by the monitoring and evaluation department at PEF



Key findings on PMIU interventions: Although the PMIU has introduced a range of interventions to improve accountability, it is mainly the formal sanctions and rewards model that is proving successful in holding education managers and teachers accountable. The school council intervention, designed to encourage public participation, has not been able to generate desired results in spite of targeted efforts. One of the reasons for this is the low level of literacy among participants of school councils and their limited ability to influence the top–down hierarchical system. The Education Hotline intervention, on the other hand, appears to be more effective, in providing the public with a feedback mechanism and a redressal system.

Key findings on PPP intervention: The private–public partnership model allows market incentives to factor in accountability and governance decisions. Market competition produces incentives for schools to provide better education services.

Key findings on ASER model: ASER uses the data to improve the accountability of senior political and bureaucratic leadership and to push for sectoral reform.

3.4 Consequences of not publishing school data

Article 19A of the constitution of Pakistan states: 'Every citizen shall have the right to have access to information in all matters of public importance subject to regulations and reasonable restrictions imposed by law'. Based on this article, the Government of Punjab passed the Punjab Transparency and Right to Information Act (RTI) in 2013, according to which, 'it is expedient to provide for transparency and freedom of information to ensure that citizens have improved access to public information; to make the Government more accountable to citizens; to enforce the fundamental right of access to information in all matters of public importance; and to provide for ancillary matters'.

The Act asserts every citizen's right to have access to information on provincial budgets and public schools and school bodies. Access to education data through the PMIU is based on the principle of information-sharing propagated by the RTI. A circumstance in which people are denied access to information is punishable under law. Despite such stringency, the Global Right to Information Rating gives Pakistan a low score of 66 for the effectiveness of its access-to-information laws. This score ranks Pakistan in the bottom 20 per cent of countries. In reality, actions that violate the RTI are often overlooked or exempted. Loopholes in the way in which this law is interpreted and implemented also make it difficult to keep track of convictions.

In October 2014, the first punishment under the RTI was recorded when the provincial Information Commission ordered a deduction of two months in a CEO's salary (*Dawn News*, October 2014). The SED was instructed to initiate disciplinary action against him. The sanction was the result of a teacher filing a petition claiming he had applied for a copy of an inquiry against the CEO and a senior list of teachers, as was his right by law, but had received no response despite repeated requests.

The recently established hotline gives citizens the chance to record complaints or give feedback regarding any aspect of the education system in Punjab. This may include instances of misconduct or violation of the RTI they have experienced. Once complaints are recorded, relevant AEOs are given fixed-time periods to address the subject of the complaint, whether making amends takes the form of building a new classroom wall or monitoring teacher presence more rigorously. The progress of AEOs in showing results is monitored by the district CEO. An effort is made to categorize all complaints and their resolution, and these records are meant to be transparent and available to senior authorities.

The lines of accountability and consequences for not publishing information are illustrated in *Table 3* (on next page).

Table 3. Accountability and consequences

	Domain of accountability	Accountability models	Lines of accountability	Consequences of not publishing info	Consequences after info is published
PMIU	The PMIU covers a mix of several domains of accountability. In terms of financial accountability, the PMIU keeps track, on a monthly basis, of NSBs allocated to public schools, which empower school management to take their own decisions regarding budgeting and planning. Pedagogical accountability is achieved through monthly measurement of LND scores that show literacy and numeracy levels among children in Grade 3 by testing concepts from the previous grade. These results are communicated directly to the secretary of education, who follows up with CEOs regarding good or bad performance. The PMIU does not touch particularly upon management accountability, since final action regarding hiring or firing of staff, for example, must be done by the DEO.	Different models of accountability are used by Punjab's education bureaucracy through the PMIU's intervention. A formal sanctions and rewards model is implemented through CEO conferences and stocktakes involving members of the education hierarchy and the chief minister of Punjab. The top-performing CEOs are credited for their success in their district, while poor-performing CEOs are held responsible, based on district rankings. A public-participation model is followed by school councils, which give a greater role to citizens through monthly meetings aimed at discussing issues pertaining to schools. Accountability is also generated through the school Education Hotline, which gives citizens a chance to offer feedback, lodge complaints, or get information regarding any education-oriented subject. Finally, a public-private model is another way of promoting accountability through PEF, which is the country's largest partnership between the government and the private sector. Together, both domains work to provide free and quality education to the poor, by increasing the access and outreach of existing government projects.	Education in Punjab comes under the SED. The SED is led by the education secretary and four other additional secretaries, and performs functions through further hierarchies at a district level, through the DEA. Each district is led by a CEO, who has DEOs, DDEOs, and AEOs to assist in his or her role. The work of the SED is supported by the DSD and the PMIU. MEAs collect data in each district, supervised by a DMO. At DRC meetings, the CEO acts as the representative of the district, and has to answer for his or her team when the information collected by the PMIU is presented in front of the chief minister and consequently evaluated and assessed.	The publication of school data is required by the Right to Information Act passed by the Government of Punjab in 2013. This means that any circumstance in which information is not provided openly to the public is one that is punishable in law. The hotline is another mechanism through which violations of the RTI can be reported, and redressal of such complaints is ensured.	Visits of MEAs are conducted on a monthly basis, and the respective schedules of these officers are randomized so school administration is not prepared for such checks. Since they are well aware of the consequences of poor performance by a school, there is pressure on them to deliver good performance. Furthermore, the system used by the PMIU to rank each district in terms of its performance motivates schools not only to perform well, but also to outperform previous records. School management is held directly accountable by CEOs in instances of unsatisfactory performance, and CEOs are publicly held to account at DRC meetings by the chief minister.

4. Analysis of stakeholders' perspectives on the usefulness of the initiative

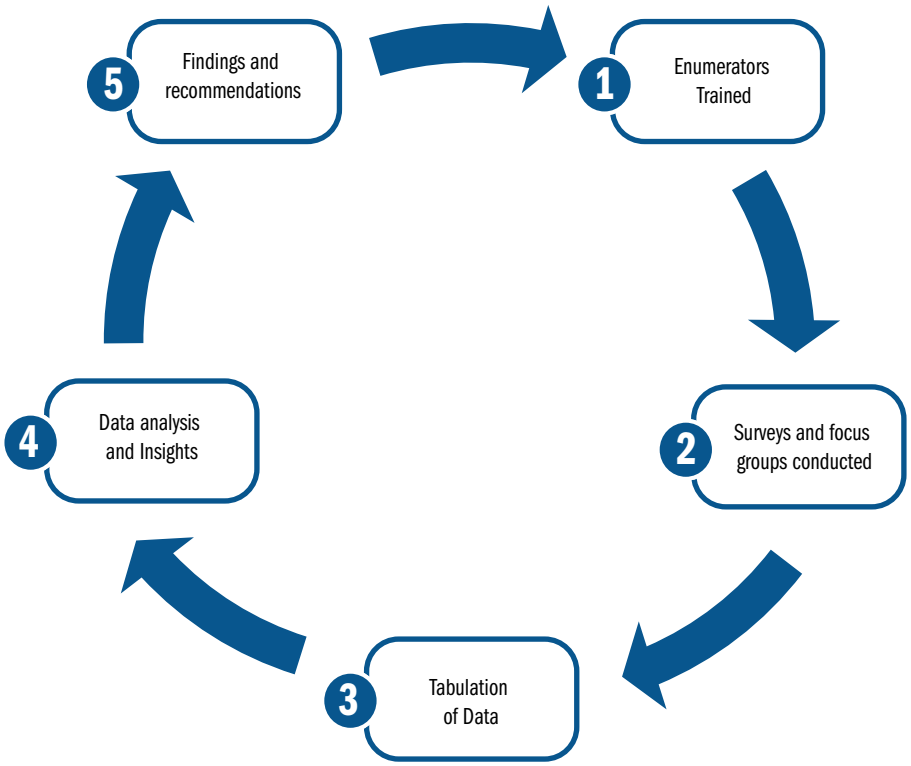
4.1 Relevance of PMIU data

In order to analyse the perspectives of stakeholders on the usefulness of the PMIU in improving transparency and accountability in education, this section of the report will focus on:

i. Quantitative data collected through the surveys of 250 school-level actors in three districts of Punjab.
ii. Qualitative data generated from semi-structured interviews with relevant administrative actors and representatives of the media, and focus groups conducted with teachers and students.

As outlined in the section on methodology, the districts chosen for this study are Rawalpindi, Hafizabad, and Chiniot. Rawalpindi is among the districts with the highest adult literacy rates while Chiniot is among those with the lowest literacy rates. For the interviews, officials from the PMIU, SED, Special Monitoring Unit (SMU), PEC, Roadmap, and media were consulted. *Figure 17* explains the data collection and usage process.

Figure 17. Flowchart showing how the data collected by MEAs are used by administrative bodies.



The headline findings of the field research are described below.

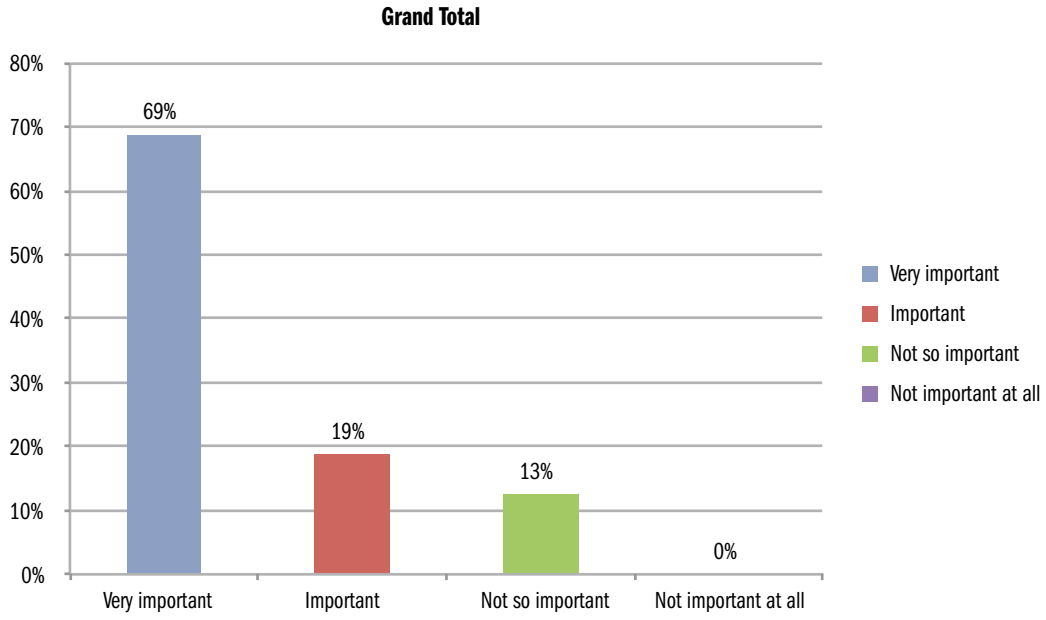
Level of interest stakeholders have in the information published by the PMIU: 89 per cent of the parents surveyed in the three districts agreed that publication of school data was 'very important' or 'important'.

In Rawalpindi, 95 per cent of parents believed the data were useful, as opposed to 87 per cent in Hafizabad, and 43 per cent in Chiniot. These results seem to correlate with the respective rate of adult literacy in each province; the difference in perspective held by parents in Rawalpindi, with the highest levels of adult literacy, as opposed to those in Chiniot, with the lowest, in particular, reflects the level of education of the adults themselves. This suggests that educated parents are more likely to be involved in the education of their children, and have a better understanding of the 'quality' of education on offer. By contrast, the surveys, interviews, and focus group discussions showed that parents who are illiterate often do not have a sophisticated understanding of 'quality' of education and are not as readily convinced of the merits of education.

In contrast to parents, school data were considered 'very important' by only 30 per cent of head teachers in Rawalpindi, with the remainder considering it 'not important at all'. In Hafizabad, no head teachers felt publication of school data was important, while in Chiniot, head teachers seemed unaware of the publication of school data, and had no opinion as to its significance. In Rawalpindi and Hafizabad, the head teachers' responses could be attributed to: (i) the increased accountability of head teachers, due to the PMIU making school data accessible to the public and the consequent threat of possible questioning, sanctions, or penalties; (ii) the perceived limiting of head teachers' influence, in a domain they considered their own, through the creation of new mechanisms of accountability; and (iii) head teachers, with their expertise in the field, not being convinced of the merits of published data as a delivery tool, believing that open access to school data may not be effective in effecting change.

While none of the members of the parent-teacher association (PTA) in Chiniot had interest in publication of school data, all the representatives in Rawalpindi and Hafizabad considered it 'very important' or 'important'.

Figure 18. PTA members' response to 'Are you interested in the information provided?'



While 88 per cent of school council (SC)/PTA members find school data useful overall, the results of Chiniot stand out in particular. PTAs are a rarity in regions with low literacy rates, which may explain the discrepancy between the results of the districts.

Overall, the PMIU seemed to generate the most active interest among parents, across the three districts. Head teachers in Rawalpindi found it useful to some degree, but overwhelmingly they felt the publication of school data did not have much merit.

A focus group was conducted with 15 teachers across all three districts to evaluate their opinions on the merits of PMIU data. While none of the participants knew when data regarding their specific school began to be published, some of the teachers, particularly those in Rawalpindi, came close in their estimates. This shows limited familiarity regarding the inception of the PMIU. Despite this, 14 out of 15 teachers agreed that the act of publishing school data was a useful endeavour. Reasons given for thinking such initiatives worthwhile included:

- Publishing school data highlights weaknesses in performance. Teachers are motivated to improve their pedagogical skills and focus more on teaching and learning; schools can evaluate their performance and set standards accordingly.
- Publicly accessible data can have a disciplinary effect; they can lead to improved teacher attendance and quality of education.
- Healthy competition between teachers, schools, and districts is seen as a motivating factor to improve performance.
- The public would have the opportunity to develop an informed opinion on government schools. The regular evidence on the work teachers do would help to challenge misconceptions regarding public institutions and, hopefully, improve how the public education system is viewed.
- It helps improve transparency and accountability.

A second focus group was conducted with students from the three districts. Only 57 per cent of participants knew whether or not data about their schools were published; however, all of them felt that such information was important and should be made accessible to the public. The reasons they gave included:

- Publishing school data ensures continued provision and maintenance of school facilities and a clean environment.
- It puts pressure on the administration to maintain a high standard of education and improve pedagogy.
- It ensures that discipline is maintained; students and teachers are motivated to attend school.

The semi-structured interviews conducted with bureaucrats and administrative officials showed unanimous agreement on the usefulness of PMIU data. Most of the respondents felt that the collection of school-level data through a monthly monitoring system provided transparency and accountability, and assisted planning for initiatives aimed at making progress in the province; the trends revealed through the PMIU database inform policy and reform. One interviewee praised these data for the immense 'research potential' they possessed. Overall, representatives from all the various departments of the provincial government believed that PMIU data was ground-breaking and much needed. They showed a clear understanding of what this initiative was, what it measured, and how collected data were published and transmitted.

Usefulness of indicators: *Table 4* shows the perspectives of parents across all districts regarding which indicators are most useful, and which are not. The indicators considered 'very important' by more than 50 per cent of respondents across all districts are school facilities, student attendance, student test scores, number of teachers, school capital expenditure, school safety, and school equipment. Of these, school facilities, school safety, and school equipment can be grouped together as indicators connected to the infrastructure of a school. The PMIU measures all of these indicators in detail, except school capital expenditure and student test scores, which are covered to a lesser degree. The PMIU keeps a record of non-salary budgets, through which schools receive a particular budget on a quarterly basis, to spend where management considers it most useful. While such data do not provide a rounded view of how a school handles its finances on a day-to-day basis, they do offer a picture of the priorities of the administration. The preferences

Table 4. Perspectives of parents in all districts on usefulness of indicators

Category	Very	Quite	Not
Number of students	39	22	21
Student socio-economic profile	7	68	17
Student attendance	86	6	0
Repetition, drop-out, promotion	30	25	23
Number of teachers	59	22	7
Teacher attendance	29	28	6
Teacher qualification	23	20	13
Funding sources	0	0	0
School income	10	11	2
School capital expenditure	55	21	5
School facilities	90	0	4
School equipment	57	15	3
Textbooks	36	31	6
Student test scores	60	18	0
School inspection	28	20	20
Community involvement	19	28	19
Parental satisfaction	0	0	0
School safety	55	15	14

indicate that stakeholders predominantly believe the most important data are being published by the PMIU, but that they would also welcome more information on budgets and expenditure. Similarly, the database collects LND results, which can be seen as an example of student test scores. However, the sample for this test is restrictive, and therefore cannot be representative of the overall quality of learning in a particular population. Currently, there is no all-encompassing system for measuring the test scores of students in every district.

Other indicators measured by the PMIU are considered generally useful, though some districts consider them to be more important than others. Regarding data on teachers, such as on their attendance or qualifications, most interest came from Rawalpindi and Hafizabad. In both areas, teacher attendance was found to be very or quite important by over 90 per cent of parents who responded. However, out of the three districts, teacher qualifications are considered significant only in Hafizabad, where more than 90 per cent of respondents valued this information. The lack of interest from Rawalpindi can be attributed to the fact that basic education and prior work experience are prerequisites for employment as a qualified teacher in this district. For example, a job advertisement posted by the Army Public School in Rawalpindi required candidates applying to join the teaching staff to hold at least a bachelor's degree. Since parents are assured that rules and regulations exist to ensure that employed teachers possess satisfactory qualifications, they might not need additional information to confirm this. This may also explain why they express interest in factors other than staff qualifications, such as the student–teacher ratio or teacher presence. The PMIU does not collect information about the particular qualifications of each teacher; MEAs do, however, note down the national identification

card (CNIC) numbers, designations, and employment category (regular, contract, or temporary) of any teachers who are absent.

In Chiniot, the importance attached to information related to teachers is generally low. The low adult-literacy rate means that parents in this district are challenged to: (i) understand clearly what 'quality' education should entail, and (ii) correlate the quality of education with teacher's qualifications and skills.

The PMIU does not collect information about textbooks. The number of textbooks in a classroom should be the same as the number of students enrolled, since each child is given access to this material at the start of the new academic year. For the purpose of this study, textbooks are considered important by all three districts, but not as important as other indicators discussed above. Since children in the province's public schools are given free textbooks as part of the government's enrolment drive, parents' concerns about the provision of textbooks should be diminished. Content of textbooks is generated directly by the Punjab Textbook and Curriculum Board in line with the national curricula. Unlike other indicators that are unique to each school, textbooks are standardized and free from day-to-day discrepancies. Results show that parents prioritize data that are specific to their own district or *tehsil*, or variables that they perceive themselves to have some control over.

Statistics regarding retention, drop-out, or promotion are given varying degrees of weight by parents in different districts. Out of the 80 total responses for this indicator, nearly 37 per cent of parents across districts found it to be a 'very important indicator', 31 per cent found it to be 'quite important', and the remaining 31 per cent found it to be not important at all. The explanation for the varied nature of these responses may lie in the diverse profile of students found in classrooms in Punjab. Parents of children who have already repeated a year, or did not attend school until relatively late in their childhood, are likely to have different views on retention, drop-out, and promotion than parents of children who moved through school at a 'standard' rate, or were promoted for top performance. The PMIU collects information on current student attendance, and allows users to compare it to the past records of any school in any district of Punjab. If attendance worsens or falls below the targets set by the provincial government, there is the possibility of examining and addressing trends concerning drop-outs.

Community involvement is seen as a moderately important indicator in Rawalpindi and Hafizabad, but as not important at all in Chiniot. Parents in the two districts with high or medium levels of adult literacy might be sufficiently satisfied with the performance of school-level actors to want to initiate or participate in activities themselves. In Chiniot, parents may not feel qualified to partake in such education-oriented community action, which may explain why they do not deem it essential. Information on school income is considered unimportant by most parents, except some in Hafizabad, who may seek such information for added accountability. The PMIU does not collect data on community involvement or school income currently.

The surveys did not generate findings on funding sources and parental satisfaction.

In summary, the PMIU does publish data that are considered useful by parents. Based on the results of the surveys, valuable additions to the current database indicators may include more financially specific information, such as how and where a school spends its allocated budget, test scores of students, and, possibly, community involvement. Tracking where the funds of a school are directed and monitoring budgets would help detect and counter any potential inefficiencies in the way in which operations are conducted, promoting transparency and reducing any corruption that might exist. Similarly, including a detailed system tabulating the test scores of students would show that the PMIU is concerned with whether, and how, learning is taking place. Finally, encouraging community engagement would increase accountability checks on the extent to which schools are maintaining

a standard of performance, as well as promoting a greater commitment to delivering promises on a district level.

While focus groups showed that a majority of teachers did not know which indicators were being measured, or whether a system of data publication such as that of the PMIU existed at all, the few participants who responded highlighted student and teacher attendance, school equipment, and the subsequent school ranking as the most important indicators. Similarly, students were unfamiliar with the PMIU, but some of them felt that teacher presence, student attendance, textbooks, and school safety were useful indicators. These results show that the concerns of teachers and students reflect the worlds in which they live, which is why they focus on indicators that concern activities that they witness or deal with personally on a daily basis, such as textbooks or attendance. They have less interest in issues of school funding sources, community involvement, parental satisfaction, expenditure, or inspections – mainly because such indicators are of less relevance to them and are seen as the domain of the administration.

Interviews with administrative members substantiated the conclusions drawn from the results of parents: that the information being collected by the PMIU covers indicators that give a sufficient picture of the state of education in any school and district. However, some stakeholders offered the following suggestions for additional data to be included:

i. Measuring quality indicators, such as the retention of taught information, along with the access indicators that already feature.
ii. Publishing PEC results of each school to show better insight about learning outcomes and the performance of subject teachers. These results could act as a quality indicator and would work in conjunction with the PMIU's access indicators to show how well schools are performing.
iii. Collecting and making available training data from the DSD to assist in the organization of more focused training workshops for teachers.
iv. Providing information on funds allocation; more specifically, how and where the budget allocated to school education is utilized.

4.2 Accessibility of PMIU data

Only 47 per cent of the parents who responded in Rawalpindi were aware of the PMIU. Of these, 57 per cent found the data useful to some degree. In Hafizabad, results were more promising, with 75 per cent of respondents familiar with the initiative; however, only 53 per cent found the information useful. In Chiniot, 57 per cent of parents knew about the PMIU, but only 25 per cent found it beneficial.

Across the three districts, 59 per cent of the respondents were aware of the PMIU, and, of these, 53 per cent considered it useful to some degree (*Figure 19* and *Figure 20*).

These results demonstrate that data access is not universal in these districts of Punjab. And while the results collected by the PMIU are transmitted through datapacks to district-level officials to support accountability, there is no such dissemination initiative forcommunity-level actors. The public are expected to access the online portal and follow the state of education in their area themselves.

The provincial government has taken steps to promote the PMIU and campaigned to encourage citizens to use its data, using SMS and social media. However, it is evident that the PMIU's real-time open database is still not being widely accessed. Information from citizen-led initiatives, such as ASER, is picked up by television, newspapers, and campaigns very quickly, whereas government-released information does not get the same traction with the media. It suggests that information published by the government is not trusted, which is linked to the public's wider distrust of Pakistan's political system and its leadership. However, if the processes that are in place to ensure data transparency in datacollection and analysis could be better communicated to the public, it might encourage more interest from parents in the system, and inspire confidence in using it.

Figure 19. Parents' response to 'Are you well aware of the PMIU?'

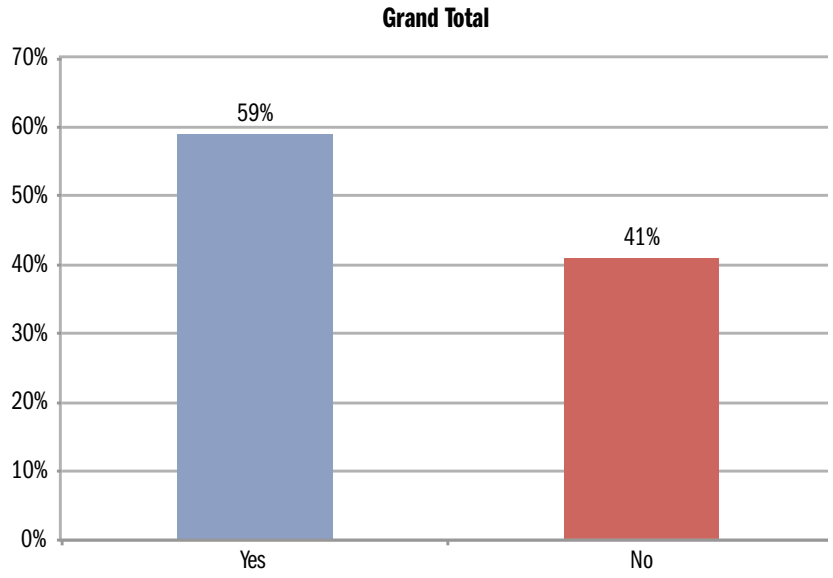
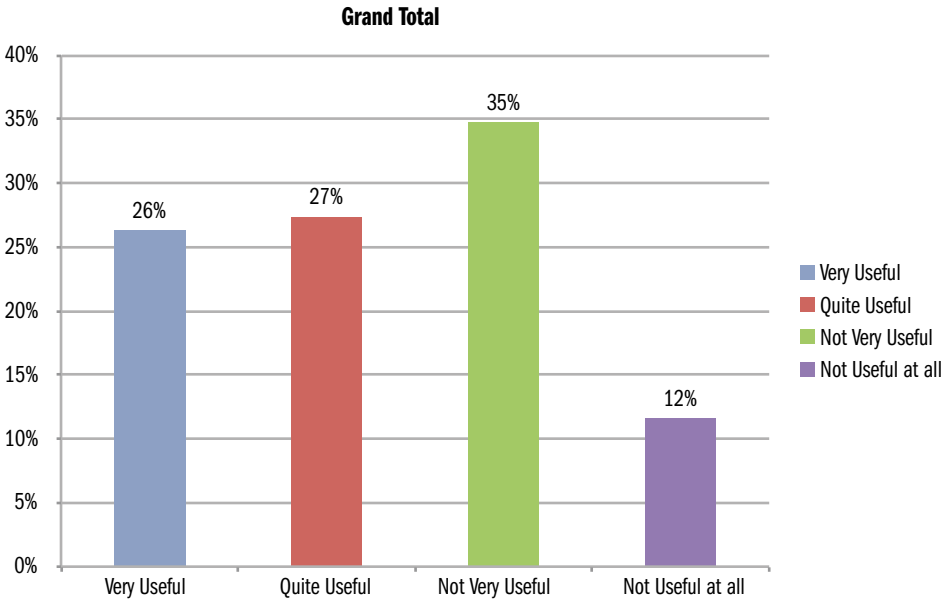


Figure 20. Parents' response to 'Do you find the PMIU useful?'



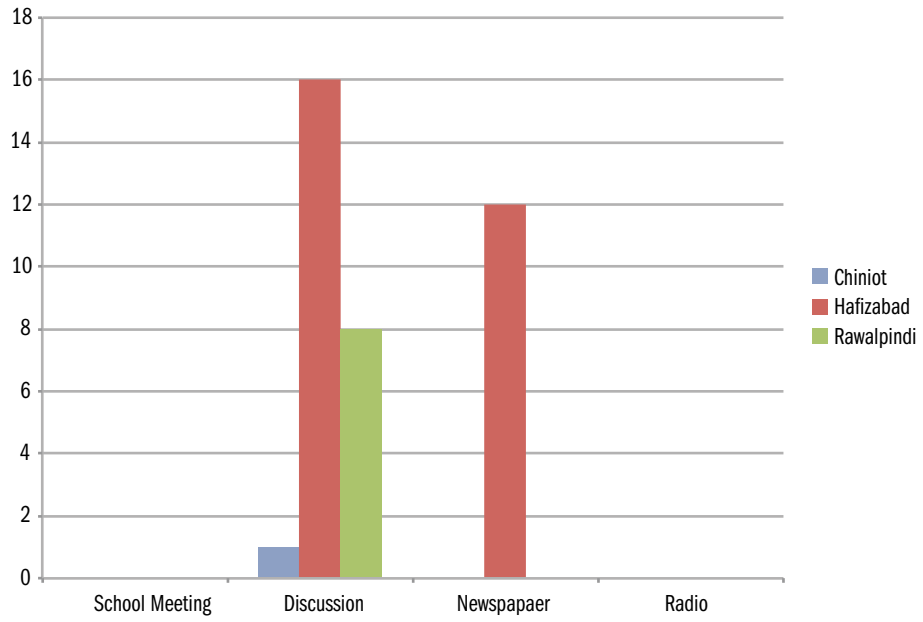
The particularly negative perception of the usefulness of the PMIU in Chiniot can be partly attributed to the incompatibility of an online system in a district where internet coverage and usage is very limited. Most people in Chiniot are not computer literate and are not, therefore, able to access school data available through the PMIU. Another explanation is the lack of motivation to access public school level data; there is currently no incentive to visit the PMIU website. This could be addressed by creating awareness of the significance of data, of the way in which it examines the quality of education, and can, more importantly, help improve the status of education, enabling citizens to become more empowered participants of the education system.

In considering how understandable the data published on the PMIU website is, 100 per cent of respondents in Rawalpindi found it to be user-friendly. In Hafizabad, 66 per cent of parents agreed it was clear and comprehensible. All parents in Chiniot disagreed, and found the data difficult to understand. These results can be correlated to each district's level of adult literacy; perceptions of user-friendliness depended on how familiar parents

were with the internet, infographics, and the presentation of data in English. Even though the PMIU website has been designed with the average user in mind, it is evident that a certain level of English language and statistical knowledge is necessary to understand what is being displayed. To benefit those who do not possess such skills, the website offers video tutorials that aid navigation, but there is little evidence on the extent to which they are used or are considered beneficial.

In Rawalpindi and Hafizabad, the most popular method of accessing school data was through discussion. Other forums for learning about school-level indicators included reports and newspapers. Parents did not seem to have any access to PMIU data through the radio or school meetings. Of the three sources of access listed by parents, respondents in all districts felt dissatisfied with the mode of dissemination of school data and its efficiency; 57 per cent of parents in Rawalpindi, 78 per cent in Hafizabad, and 75 per cent in Chiniot felt more work needed to be done in terms of making school-level data accessible. These results are interesting, because head teachers in all three districts believed they were actively communicating relevant information to the public through reports and, in the case of Rawalpindi, through presentations at DRC meetings, school meetings, and the radio. If such efforts were being made, they either failed to reach parents or were not sufficiently clear.

Figure 21. Parents' response to 'How are school data disseminated?'



These findings show that there needs to be system of sharing, discussion, and continuous engagement with PMIU data at a community level, as happens with the oversight authorities at a district level; at best, AEOs might now share results directly with head teachers and relevant community members upon receiving datapacks and attending PreDRC meetings but there is nothing more systematic. Moreover, some respondents felt that data catering to the public should be published in the native language of the province; low take-up of data seems to be exacerbated by the fact that the information is published in English, and is thus understandable only by a relatively small proportion of parents.

Similar to the results of parents, most teachers had not accessed the PMIU data; only three teachers from Rawalpindi responded affirmatively, and they had received it through the datapacks of AEOs. These teachers agreed it was easy to understand, however, it is important to note that they were commenting on the reports provided to AEOs during the PreDRC meetings, and not the PMIU's online forum. Students were unable to respond to the user-friendly nature of the PMIU data because none of them had ever accessed it.

It is interesting to note that PMIU data were not accessed through the website by parents, head teachers, or teachers. This shows how the government's choice of an online database for the publication of school-specific data might need reconsideration, since even primary stakeholders do not use this platform voluntarily; they rely on information reaching them directly through discussion or meetings with relevant members of the education hierarchy. Furthermore, it is worth noting that smart phones seem to be the key resource for accessing data; however, again its usage is dependent on access to phones and the income levels of parents, resulting in higher concentration in urban areas. At this time, there are no data available on the usage of smart phones in the selected areas. The findings indicate data need to be given directly to the public, in a convenient format, if they are to engage with the information. And, if discussions are indeed the most successful means of accessing data, then new approaches, such as broadening the role of MEAs not only to collect information, but also to disseminate it among the districts they visit, should be explored.

The interviews conducted with administrative stakeholders revealed that all agreed that: (i) making all data, good and bad, public and accessible online was essential in adhering to with the Right to Information Act; ii) publishing data on the PMIU web portal has provided a much-needed system of accountability, monitoring, and evaluation; and iii) data were being published in regular intervals and in a timely fashion. However, most interviewees noted that the 'low technical knowledge' of large sections of the community, as well as limited 'advocacy' regarding the existence of the PMIU, limited access. One interviewee quoted a report that stated '60 to 70% of parents didn't even know their children are supposed to get free textbooks in public schools' (Nielsen, 2015). Furthermore, language barriers were highlighted as a major hindrance to the success of the online platform. Two of the interviewees felt that having data available in English limited its audience, and that efforts should be made to incorporate more local languages.

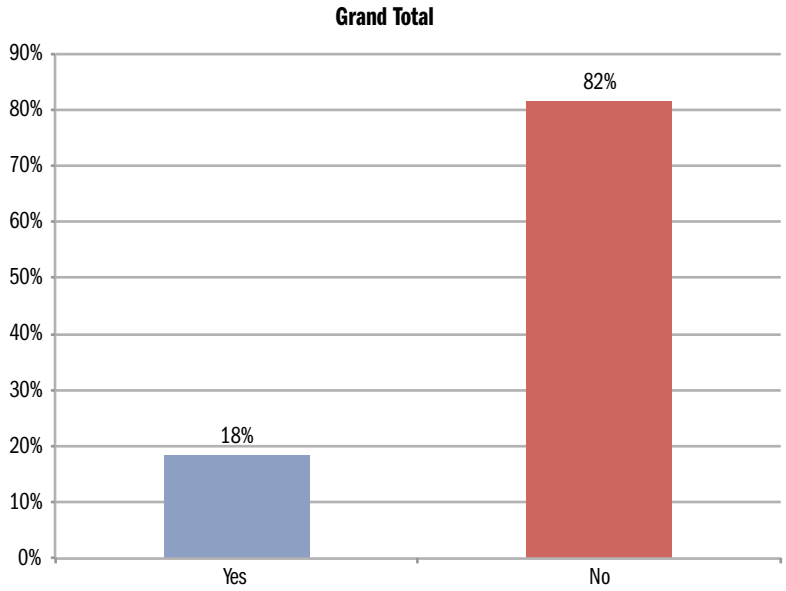
While all officials recognized the usefulness of the online PMIU database in making education management more transparent, and supported the publication of all available data, even where they exposed them to sanctions, they believed access could be improved if the website was supplemented with other means of disseminating information. Initiatives such as SMS alerts and the Education Hotline were considered positive in terms of increasing usage and engagement with the PMIU data, particularly among those who are less computer literate. While the hotline currently only registers complaints, there is potential for it to be developed as a platform to provide information. Another initiative, designed to promote access and understanding of the PMIU data, was a training session developed for education reporters last year, exploring the RTI and the PMIU. Following this training, journalists wrote articles and reports based on what they had learned, thus disseminating information and awareness about the PMIU to a larger public.

4.3 Usability of the PMIU data

When asked if the publication of school data influenced the decision of parents to send their child to a particular school, 74 per cent of respondents in Rawalpindi answered in the negative. Similar trends were seen in other districts: 86 per cent of parents in Hafizabad and 80 per cent of parents in Chiniot agreed that there was no correlation between their child's enrolment and the information they had accessed through the PMIU.

Some parents did make use of the PMIU data in ways other than determining where to send their child to school. However, this proactivity existed only in Rawalpindi. Here, school-level information was used by parents to put pressure on education authorities and schools to: (i) reduce corruption regarding school facilities; (ii) reduce teacher absenteeism; and (iii) make better use of education funds.

Figure 22. Parents' response to 'Did the publication of school data influence your decision to enrol your child in a particular school?'



These results show that literate parents generally took a more active role in assuring the quality of education offered to their children, even though interventions were limited to demanding answers and better accountability from school management. These actions are effective, since pressure from community-level actors through any means, be it protests, social media campaigns, or rallying the media, has been shown to directly affect the decisions taken by school-level actors. Therefore, it becomes the role of district officials to match the needs of the public with the efficient delivery of education services.

Head teachers in all three districts had school-level data and demonstrated regular engagement with PMIU data. All head teachers in the surveyed districts believed that the indicators most critical in improving transparency and accountability in the management of education resources and fighting possible corruption were: teacher attendance, textbooks, and school inspections. Working with their staff, head teachers can create a safe and effective learning environment. Since textbooks shape the perspectives of young children, they are also considered an important feature of education management systems. Furthermore, head teachers advocate and support transparency by complying with regular checks and balances, such as unannounced visits by the MEAs.

Other indicators considered important by head teachers were student attendance, school facilities, and school safety. Only one head teacher in Rawalpindi highlighted the number of students as significant, and one head teacher in Chiniot felt the same about community involvement.

Head teachers use the open-school data in several ways. In Rawalpindi and Hafizabad, the primary use of such information is to drive reward and punishment systems. Since head teachers are directly accountable to AEOs, they need to ensure the performance of their school meets expected standards. Using NSBs, for example, teachers with full attendance could be awarded a bonus or given public recognition in front of the rest of the school. However, information obtained from the PMIU data can also provide a structure for penalizing students and teachers with poor attendance records. In this way, the data collected by the PMIU support the development of accountable and efficient internal management systems.

Another use of these data is to set goals for schools. If performance for a particular month does not meet the targets set by the provincial government, figures collected by the PMIU help head teachers determine which areas need to be prioritized and what

approach would work best to achieve the expected performance standards. In Rawalpindi and Hafizabad, head teachers reported using information for resource allocation as well. NSBs can be spent more pragmatically once it is understood how urgently a particular problem, such as the repair of a dangerous wall, needs to be addressed. Through such active engagement with the PMIU's information, head teachers are able to give feedback to parents and promote community engagement as well.

In Rawalpindi, all head teachers used data specific to their school in order to generate comparison with other schools; 66.6 per cent of head teachers in Hafizabad and 50 per cent in Chiniot used it in the same way. These responses show how access to the performance of one's own school, as well as other schools in the same or other districts, can generate a spirit of competition, whether through beating personal records for the previous year, as in Hafizabad, or comparison with a manufactured score based on minimum standards of performance, as in Rawalpindi. Given that the PMIU publishes district-level rankings, such comparisons may help schools understand their role in the overall standing of their area, and emphasize the need to meet performance targets.

The survey revealed that teachers used school data as a personal accountability mechanism. In the focus groups, participants reported being more vigilant and cautious because of the repeated checks on their performance by the administration. Knowing they were competing with other schools in terms of district-level rankings also motivated them in terms of performance. In such a public arena, they felt pressure to meet expected standards. Teachers discussed the alertness with which administration had worked since the PMIU was set up. One participant summed up this increased accountability, stating: 'Now that communication is improved, everything is transparent, and AEOs tell us more often to work on indicators weak in data'. Students agreed that school data fostered efficiency by keeping teachers attentive at all times, since they were being inspected more closely than before.

One of the interviewees outlined the following stakeholders as the 'target population' that engaged and benefited from the PMIU data:

- Parents
- Public education managers
- Private education sector
- Planning and development department
- Education policy-makers
- Consultants

Some of the ways in which administrative officials used the PMIU data in their work and departments were:

i. to determine the allocation of resources, particularly through decisions taken at PreDRC and DRC meetings;
ii. to analyse trends and patterns in the information and carry out investigation or checks where needed;
iii. to develop a constant feedback loop between district-level actors and education authorities based on regular accountability checks;
iv. to devise plans and strategies to ensure performance is in line with the targets and goals outlined for the school, and, on a broader level, the district and province.

Table 5 summarizes the aspects of information relevance, readability, accessibility and usability.

4.4 Short-term impact of the PMIU data

As discussed above, for those stakeholders aware of the PMIU the publication of school data resulted in notable demands by parents, and improved accountability and transparency in school systems through steps taken by head teachers.

While results were substantial only in Rawalpindi, they nevertheless showed that parents used their access to open information to put pressure on education authorities to use funding more transparently, improve facilities, and keep track of teacher presence. With the feedback option on the PMIU website, as well as the recently established Education Hotline, feedback from the local community is given greater weight, and complaints made by parents are recorded, addressed, and resolved. Similarly, head teachers used their position to make management more efficient, in terms of rewarding top-performing teachers and students, and penalizing those who fell below expected standards. And while they do not have direct control over funding decisions, except through initiatives such as NSBs, they used the PMIU data to determine where resources needed to be allocated and which areas required extra attention. Moreover, head teachers used the information published by the PMIU as a tracking tool for performance; comparing results to previous figures, as well as to overall standards, in order to assess where more work was needed and how this could be achieved.

Since parents and head teachers have limited capacity in terms of influencing decisions in schools, it is important to consider how district officials reported using the PMIU data for short-term changes.

The methodology of the PMIU means that information on indicators is collected on a monthly basis, and this routine system of checks ensures that risks of malpractice or corruption are minimized and addressed at grassroots level. The SED's hierarchal structure of reporting means complaints and problems are highlighted to relevant authorities quickly and that there is pressure to resolve any inefficiency, discrepancy, or poor performance through deadlines. The Deputy Commissioner and CEO of each district are held accountable for performance and are updated daily by the PMIU. They, in turn, hold their middle and lower-tier managers, such as AEOs accountable. These AEOs use the feedback from PreDRC meetings, as well as their datapacks, to address any issues concerning management and facilities that may be affecting a school. The goal is to resolve these problems before DRC meetings, or to make sure progress is underway at the point at which they are questioned about performance.

One interviewee gave an anecdote about how the PMIU data were used to improve the allocation of resources; when a minister found out that there was an insufficient number of rooms for students in a school in Lahore, he visited the school and granted the administration money to build more rooms immediately.

Any trends or patterns that are detected in the PMIU data are used to drive investigations. Even the risk of possible corruption can be reported to relevant authorities, who then take the necessary steps. This may include extra checks on the performance of an MEA, pay-cuts, or the dismissal of under-performing teachers, or more vigilant progress updates on how funds are being utilized for a certain project.

Table 6 highlights the impact of data collection and its usage on funding, management, pedagogy, and other short-term impacts.

4.5 Long-term impact of the PMIU data

The interviews with administrative officials revealed the following ways in which the publication of the PMIU data is having a long-term impact:

- **The Education Hotline**: The Education Hotline was established to provide a two-way exchange and allow feedback to be gathered in relation to the PMIU data. It offers a dedicated telephone line to allow the public to express concerns and complaints about micro- and macro-level issues and a feedback loop through which communities are able to engage with the data collection process, recommend change, or express their concerns. The initiative seeks to empower the general public by involving them in the decision-making process.

Table 5. Overview of the findings with regard to information relevance, readability, accessibility, and usability

	Relevance	Readability	Accessibility	Usability
PMIU	Most parents in all three districts agreed that school data were important, while head teachers held the opposite opinion. Members of the PTA in Rawalpindi and Hafizabad thought information was relevant, but there was no such consensus in Chiniot. A focus group conducted with teachers showed that 14 out of 15 considered publication of these data to have merit. In a focus group conducted with students, all agreed this information was relevant and should be published. In interviews conducted with relevant administrative members and representatives from the media it was unanimously agreed that these data was relevant.	100 per cent of respondents in Rawalpindi who had seen the PMIU website found the data easy to understand. In Hafizabad, 66 per cent of parents considered it clear and readable, whereas all the parents in Chiniot found it too hard to understand. Only three teachers had seen the PMIU data through the AEO's datapacks,, and they felt it was easy to understand. Students had never seen this information, so were not able to comment on its readability. Representatives from the government and media were familiar with the data, and were able to comment on the specifics of the website with ease. While they found the published information readable, this may simply be because of their expertise, since they all shared the opinion that the database needed to be more user-friendly.	In Rawalpindi and Hafizabad, parents outlined discussion as the primary means through which they accessed school data. However, 57 per cent of parents in Rawalpindi, 76 per cent in Hafizabad and 75 per cent in Chiniot felt that more work needed to be done to make the information more widely accessible. In contrast, head teachers in all three districts felt that they were actively communicating relevant information through different forums, such as reports, presentations, school meetings, and radio. A majority of teachers had not had access to the data – the three teachers who had seen them had engaged through the AEO's datapacks. Students had no access to this data. Interviews with stakeholders found that access to the PMIU data could be improved if the online forum was supplemented with other methods of dissemination, particularly those that required low technical knowledge, and was in an appropriate language.	For 74 per cent of parents in Rawalpindi, 86 per cent in Hafizabad and 80 per cent in Chiniot, the PMIU data had no influence on their decision to enrol their children in a particular school. In Rawalpindi, however, parents used data for other reasons, such as putting pressure on school authorities to reduce corruption in facilities, reduce teacher absenteeism, and use funds better. Head teachers in all three districts used data regularly, mostly to drive reward and punishment systems. Other purposes included setting goals for schools or generating comparisons with other schools. Teachers reported using these data as an accountability mechanism, since the pressure of being regularly monitored on the basis of their performance made them more vigilant, hardworking, and cautious. Overall, data were used most thoroughly in Rawalpindi by parents, head teachers, government organizations, members of the PTA, and teachers, but only by government organisations in Chiniot. Interviews with administrative officials also highlighted different ways in which the PMIU data could be used to benefit decision-making, such as in the allocation of resources, detection of trends and patterns, sending feedback, or planning future strategies.

Table 6. Impact of data collection and its usage on funding, management, pedagogy, and other short-term impacts

	Impact on funding	Impact on management	Impact on pedagogy	Other short-term impacts
PMIU	Parents in Rawalpindi used their access to the PMIU data to put pressure on school authorities to use funding more transparently. Head teachers, through their involvement in initiatives such as NSBs, were able to use the PMIU data to identify where resources needed to be allocated and which areas required NSB funding.	Parents in Rawalpindi used their access to the PMIU data to put pressure on school authorities to improve facilities and monitor teacher presence. Head teachers engaged with the PMIU data to make management more efficient, rewarding top-performing teachers and students and penalizing poor performance.	In terms of pedagogy, teachers reported being more alert since the inception of the PMIU. Knowing that their attendance, as well as their ability to teach lessons effectively (captured through LND scores by the PMIU) are being rigorously monitored, they are more motivated to improve their pedagogical training and to seek out best practice for teaching and learning.	Overall, the PMIU uses a top-down approach to ensure any inefficiencies concerning management, funding, or pedagogy are handled internally to avoid wider ramifications. Even minor issues can be passed to AEOs, who must address such complaints or be held accountable for them at PreDRC meetings.

- **Setting examples for other provinces**: Following Punjab's lead, other provinces in Pakistan have begun to prioritize education reform. Efforts are being made to set up similar monitoring and implementation units in these provinces, such as the Independent Monitoring Unit in Khyber Pakhtunkhwa. This positive development is due to the success the PMIU has had in terms of increasing accountability and efficiency in education reforms in Punjab.
- **Restructuring of the accountability chain**: One of the interviewees discussed a structural change that occurred through the process of open data publication. While one DMO had initially been placed with one MEA per district, steps were taken to further clarify and streamline the accountability chain. The numbers were increased to one MEA in each *tehsil*, and then further changed to one MEA for every 60 schools in Punjab. Recently, another change in the organogram of the SED was the addition of the DEA to make district level roles in the education system still clearer.
- **Digitizing data collection**: In order to counter any possible discrepancies or human error in data collection, MEAs moved from filling out forms manually to using pro formas on android tablets. These tablets collected live data through smart monitoring, and allowed real-time results for every school in Punjab to be featured on the website.

Table 7. Multi-dimensional impact of the PMIU

	Responsibilities better established	Sanctions taken	Anti-corruption policies adopted	Communities better empowered	Other long-term impacts
PMIU	Since the creation of the PMIU, the accountability chain has been clarified to make the data collection process as efficient as possible. The number of MEAs has increased to one MEA for every 60 schools in Punjab. Additionally, the DEA has been established to make roles on a district level more independent, and consequently the chain of command clearer and better defined. This chain of command is clear to every member of the education hierarchy, and allows the PMIU to ensure specific accountability for respective responsibilities.	The Education Hotline provides an accountability mechanism, giving the public a platform through which to voice their opinions, report any problems or complaints, or ask for information regarding the PMIU data. Once a query is lodged, it is time-specific, and immediate steps for redressal are taken. If performance still remains below expectations, then sanctions may be applied. The RTI also guarantees freely accessible and open data, and any circumstance in which this is not the case is punishable in law.	While not a policy as such, a significant step towards combatting possible corruption in terms of data collection was taken through the digitization of the entire monitoring and evaluation process. While MEAs previously filled out forms by hand, they now use android tablets that are synched directly to the online database. Human error is reduced through this standardization of data, which also makes it easier to identify trends and patterns over time.	Previously, the PMIU had an option of leaving feedback or requesting information on its online public database. However, the development of the hotline has provided a tool to empower communities to a much greater extent than was previously the case. This dedicated phone service ensures that the voice of the public will be heard. Complaints are addressed, and the direct communication with an operator is a more immediate way of dealing with requests or queries than navigation of a website.	Since the PMIU is limited to Punjab as of now, it has succeeded in inspiring other provinces across Pakistan to make education a priority and to develop similar monitoring and evaluation units.

5. Conditions for success, limitations, and strategies for improvement

5.1 Factors that impact on the success of the PMIU

The interviews with key informants suggested that several factors were considered critical to the success of an accountability mechanism such as the PMIU. The first of these is the government's willingness to invest its time, budget, and resources in the initiative. If the initiative under discussion aligns with the motivations of the government, then the ball is set rolling in the direction of progress. One interviewee acknowledged that the government's willingness to take direct charge of education reforms inspired the creation of the PMIU, which was built to implement policies and monitor the entire process. This kind of attention to the public education sector had been much needed. Others agreed that no initiative could achieve much unless a proper structure of legislation and formal backing were in place.

Regarding the PMIU, in particular, results showed that the role of MEAs was considered the backbone of the effectiveness and success of educational data. Since the MEAs collect the information, it is very important to ensure that they are objective, reliable, and motivated in the work they are doing. The provincial government takes care of this by setting specific criteria for the selection of MEAs. This selection is done on the basis of merit, as well as prior bureaucratic background. Furthermore, education actors felt that a regular check on the tablets used by MEAs is necessary for transparency and accuracy. Even though the PMIU ensures that the schedules of MEAs are constantly changed so no personal alliances can be formed with school management, there may be mistakes when data are entered on the tablet, which is why it is monitored regularly. Unless MEAs are committed, unbiased, and vigilant in their roles, the data that are collected will not present an authentic picture of the education system in Punjab. A representative from Roadmap shed light on the different ways in which MEAs were held accountable by the PMIU, including quarterly third-party audits of different MEAs, monthly audits by DMOs, and open data for the local community to challenge. Such checks serve to put pressure on MEAs to do their job with precision.

Along with the collectors of data, the technology employed to collect these data was deemed another critical factor in determining the effectiveness of the PMIU. When paper-based methodology was found lacking, a transition was made to android tablets. These tablets began to generate live data through smart monitoring. Now, the website provides real-time data for every school in Punjab. This method is much more reliable and systematic than filling out forms manually across *tehsils*, but this reliability is contingent on how accurately information is entered by MEAs onto the devices. By digitizing the process of data entry and analysis, the PMIU ensures the timeliness of data, which was highlighted as another important criterion influencing the initiative's success.

Proper promotion of the open portal was also noted as an essential factor that influenced the effectiveness of the PMIU. A representative from the Special Monitoring Unit (SMU) felt that some information was 'public just for the sake of being public' and that it would not meet its full potential until people actually knew about it. Targeted marketing and informed awareness of this initiative, including through information about what it does, how beneficial it can be, and the Right to Information Act, are needed to expand the scale of the PMIU's audience and its usability.

A representative from the media also pointed out the importance of identifying the appropriate channel through which to publish information as a determinant of the

success of the PMIU. An awareness of the audience that is being targeted is essential; such awareness would show the government that the internet, which is the primary mode of publication used for the PMIU, is not a feasible option, since a majority of the audience does not have access to internet at all. Furthermore, choosing a platform that expects people to go 'pro-exploring' is problematic; having to open a website to see whether teachers are present or not seems like a difficult and unnecessary task for most. These insights show that where information is being published and how it is accessed by the public are both factors that need to be considered carefully in constructing a strategy for the PMIU's success.

Finally, results showed that the success of the PMIU also depended on constant checks and balances. Through clear hierarchies and regular feedback among those involved in the collection of data, its transmission, and implementation, the hygiene of the PMIU data can be maintained. By sharing information along a chain, the data gathered at a grassroots level become more transparent. Any bias on the part of the stakeholder will negatively affect data, which is why there should be no personal interests in the monitoring and evaluation of indicators.

5.2 Limitations and risks of the PMIU

All stakeholders agreed that the publication of data was obligatory and mandated by the RTI. Even if a school does not perform well in a particular month, it is the right of the public to have access to these data, which is why it must be published online. Such low figures can be used by education management as an opportunity to learn and improve.

While most interviewees supported publishing 'all' data as the only possible means of achieving real accountability, some results showed concerns that complete transparency of information was not a viable option in the context of Pakistan, particularly because of the tendency of the media to misuse open data to sensationalize news. In particular, any points that reflect poorly on administrative authorities are seized upon and manipulated by external bodies to create sensationalism and influence the perceptions of the general public. A high performance of 90 per cent against any indicator, such as student attendance, would still prompt many critics to focus on the missing 10 per cent.

Interestingly, the same perspective was shared by a representative from the media. At times, the need for a 'stronger story' would override details as mundane as the number of teachers who are present in a school at a given point. This is not eye-catching enough for a journalist to pick up, as, by and large, the interest of the media in education lies in event-driven stories or items of human interest – an egregious example of corporal punishment or a case of a ghost school would be more likely to be featured as news. Information about schools would become part of such articles, but not the primary focus.

It was also felt that data that could be used against the state should be kept confidential, but that information that pertained to the public should be made public. However, a majority accepted that there were certain unavoidable security risks that came with initiatives such as the PMIU. One participant mentioned that the precarious internal and external politics of Pakistan made the existence of an online platform, where details of a school, along with its address and the number of students enrolled, a dangerous initiative from a security perspective. He may have been referring to the prevailing sense of fear since the attack on the Army Public School, Peshawar, in 2014. However, he felt that the 'risk of people coming against the system is not a big one, because everything is improving and data supports this'. Overall, it was felt that any invasion of privacy was a necessary sacrifice in order to ensure the effective monitoring, evaluation, and accountability of the education system in the province.

Publishing 'too much' information about teachers may also be counter-productive and could demoralize the workforce. If faculty members begin to feel they have no privacy

or individual freedom, they might start to see the PMIU as an initiative that dampens their motivation to teach well, rather than inspiring them to do better. Such an opinion may well be held by those teachers who have been absent during an MEA visit. The PMIU publishes the CNIC number of absent teachers, and this may lead to humiliation and censure from fellow teachers and community members. It is important to strike a balance between fostering productivity and respecting the privacy of participating actors when information is published.

Another point raised as a limitation of the PMIU concerned comparing all districts on the same level. In Punjab, there is a marked difference between the north and south, as well as between schools in rural and urban Punjab. If districts within the province differ on the basis of literacy rates, resource allocation, and economic prosperity, it is to be expected that such factors will have an impact on the indicators measured by the PMIU, including the LND scores. An interviewee underscored how problematic it would be to compare a district in the south, such as Chiniot, with a district like Lahore. A better pool of candidates would apply for teaching positions in Lahore, which, coupled with a higher standard of living in the area, would have an effect on how well material is taught to Grade 3 students in both places. By placing all districts on an equal footing during ranking, the PMIU neglects to take such factors into consideration.

Suggestions to ensure that published information is actually used by target audiences included involving these stakeholders in the data collection process. By giving the general public roles and responsibilities in the generation of the PMIU data, awareness would spread of the results collected, which would increase their usability. Another recommendation emphasized the role of the media as integral; whether the forum is print or television, the support and willingness of the media to engage with the PMIU data and help transmit it to the wider public would promote knowledge about this initiative. Through campaigns or promotional videos with access links to the PMIU, the media can help in ensuring data are made available to targeted audiences, as it is meant to be.

5.3 How the PMIU can be improved

Each one of the key informants offered recommendations to increase transparency and accountability in the education sector through the PMIU. Proposed strategies to improve the impact of the PMIU included:

- Measuring quality indicators to derive an actual picture of the reality of the state of education in any school. While access indicators are extremely useful, it is important to consider indicators, such as learning levels of students, to make the PMIU a stronger database. Such measures would also help in assessing where the difference in quality exists between private and public schools, and how it can be bridged.
- Minimizing human involvement in the data collection process and bringing greater objectivity into the system.
- Increasing sources of information, such as verifying indicators from head teachers, in order to diversify data resources.
- Arranging technical training for district staff and strengthening the DMO office. This would improve the capacity of district education authorities so that they could monitor data on a daily basis.
- Making raw data accessible to the public to encourage research and academic work on areas pertaining to education in the province.
- Improving the promotion, marketing, and advocacy of initiatives such as the PMIU so the public can be made aware of them.

- Equipping communities with the technical skills to make use of information published online. This could be done by turning provincial DRC meetings into public events, so relevant stakeholders from education circles can witness and comment on the achievements and shortcomings of the public education system in Punjab.
- Increasing autonomy at a school management level by allowing teachers to collect their own data, take ownership of it, and update it on a regular basis. These data should then be verified and reviewed by a deputy DEO. Such a framework of data collection would strengthen SED and decrease dependence on third parties for collection and processing of data.

6. Conclusions and recommendations

Through its analysis of the role of the PMIU in shaping accountability and transparency in Punjab, this report concludes that open-data initiatives do have the power to improve the way in which education systems are managed. In a province such as Punjab, where education can take numerous forms, including public schools, private schools, public–private partnerships, *madrassas,* and home schooling, having a live database that keeps track of such dynamic statistics adds much-needed structure to a diverse landscape. Even though the PMIU focuses only on public schools, including mosque schools as a separate category on its website, having a database that keeps track of indicators such as student attendance, teacher presence, and school facilities supports monitoring and evaluation, the identification and analysis of trends and patterns, and informed decision-making concerning where resources should be spent. Using the heat maps available on the PMIU website, a layman can gain an accurate picture of the performance of schools in every district of Punjab, as well as of the overall success of education in the province as a whole. It would be impossible to imagine a school system as large as the one in Punjab functioning efficiently and making efficient gains across the province and its 36 districts, without a robust monitoring and evaluation system to manage, track, and deliver against targets.

The PMIU builds on a clearly defined education hierarchy and a digitized process of data collection to promote transparency in the way in which policies are implemented and work is carried out. By making this information openly accessible, any member of the public, whether a journalist, a researcher, a parent, or a community leader, has the opportunity to contest data that are erroneous or to put pressure on school authorities to provide explanations for poor performance. This offers the public the chance to participate in shaping the quality of the education their children receive. However, this is conditional on their actually accessing the data that are published online. If the public take an active interest in information such as student–teacher ratios and the results of LND scores, and have internet access, they can influence the decisions of school management and demand improvement in areas they find weak or unsatisfactory. Data, therefore, need to be disseminated more widely, and need to be accessible across all sectors of the country. This is achievable by making the data simpler and easier to understand, as well as by making them available in the indigenous languages spoken across the country (Urdu being predominant).

However, to make this sustainable, these changes need to be accompanied by awareness of the actual use and function of publicly available data, and how they can lead to impactful change. Greater awareness is needed of how current indicators contribute to the overall delivery of education (including school facilities: presence of toilets and boundaries), for example. But most significantly, there needs to be more awareness of what 'quality' means and what a quality education entails, and more attention paid to how that is seen and measured through learning outcomes. Building this awareness is crucial in encouraging parental involvement in education reform and citizen-led accountability.

Forums such as the Education Hotline and school councils are critical points of entry, and their redressal functions should be further strengthened, with actionable steps designed and shared with the public to inspire confidence. The mandate and functionality of school councils also needs to be strengthened and supported by government, with the roles of members expanded.

In the collection of data, MEAs are directly accountable to DMOs, and since information loaded on tablets is synched to the online database immediately, these data also reach higher tiers of the bureaucracy. As the representative of the district, the CEO must be answerable for the performance of schools in his area of control through the PreDRC,

DRC, CEO, and stocktake meetings. Furthermore, monthly district rankings, along with the comparison of a school's performance with previous performances and expected targets set by the government, all serve as accountability mechanisms. A rigidly defined chain of command is another condition that ensures the success of open data initiatives such as the PMIU, particularly in a province like Punjab, where shortcuts in getting a task done are common, unless careful surveillance is in place. Any bias that may exist on the part of MEAs, who are veterans in the field and may have affiliations with particular school administrations, is avoided by shuffling the schedules of their school visits, and by using tactics such as quarterly third-party audits of MEAs, monthly audits and checks by DMOs, monitoring of tablets, and the existence of a hotline, where any community member is able to report possible collusion or inefficient performance. Since the ranking of a district depends on the effective performance of every member of the hierarchy, and every member is hired on merit for the roles that have to be performed, there is motivation to perform tasks with diligence.

While this report has focused solely on the PMIU as an example of a government-led initiative, it has also examined ASER as a representative of a citizen-led initiative, to enable comparison. The benefits of a government-led initiative include highly trained officials carrying out every step of the data-collecting process and its implementation, the compliance of school management during the visits of MEAs, and greater resources, which ensure that information is gathered at regular intervals and over a larger expanse and scale. The PMIU ensures that every school in every district of Punjab is visited by a team of trained officials. School management teams remain alert in case an MEA visits, as the consequences of poor recorded performance is both understood and feared. The data collected are sent to administrative bodies such as the SMU, where they are analysed and used as a basis for future decision-making.

ASER does not have the same scope or reach the PMIU has, but it does offer lessons that can be adapted to make the PMIU a stronger initiative. Theoretically, a citizen-led initiative would be more effective than a government-led one when one considers that the public responds more favourably to information published by people they know they can trust. Several political upheavals and a history of corruption associated with many government officials have created an environment of mistrust that has led people to react to even the most well-intentioned initiative with suspicion. The results generated by ASER, on the other hand, even if they are based on estimates, are quickly seized upon by the media, and consequently believed by the public. A government-led initiative does not have the same kind of hold over public opinion. This shows how the success of the PMIU will depend on the provincial body's ability to make the entire process of data collection transparent and to construct a carefully designed marketing strategy to make the initiative popular among ordinary people.

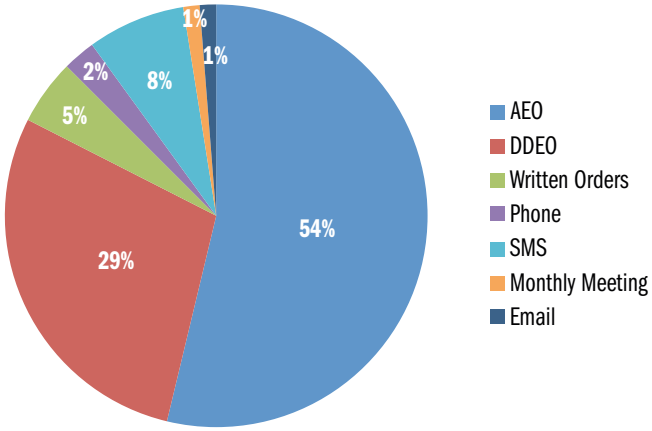
Another recommendation arising from the example of ASER concerns the revaluation of the way in which collected information reaches the public. Owing to limited resources, ASER has a policy of instant feedback; the results of tests are communicated to targeted households, and a collective gathering gives community members a chance to discuss these results with each other and to consider which areas need most attention. By contrast, the PMIU publishes data online in English. This shows a lack of understanding of the audience the PMIU hopes to target. It is important to consider the limits of an internet-based database, given how such a medium restricts access. Not having the option to translate the webpage into the native language of visitors, who may have different preferences according to the district in which they live, limits access to the PMIU even more. Additionally, even if the public are able to use the internet to access public school data, it is not clear how far people will be willing to go in seeking this information. Bringing information to them, instead of expecting them to access it themselves, would be a better approach to establish the standing of the PMIU. Overall, augmenting the website, by, for

example, sharing datapacks with the public, organizing gatherings, or broadening the role of MEAs to interact with the schools they visit and explain the data they collect, would be an effective strategy to improve access.

Finally, ASER considers quality indicators, in addition to the access indicators measured by the PMIU. While the PMIU does take the LND scores of students into account, it does not undertake a thorough assessment of how well students are learning and retaining information. While other assessments are in place, such as those conducted by the Punjab Examinations Commission of Grade 3 and Grade 5 students, the scale of the education system in Punjab has deterred the establishment of routine assessments of students across every school at every grade. Furthermore, information on the allocation of funds and how budgets are allocated to school education could also be added to the list of indicators measured by the PMIU. Currently, the PMIU's assessment of budget utilization and financial accountability leaves something to be desired. Finally, the PMIU should aim to target all schools, and eventually move towards the inclusion of private schools as well as public ones.

In order to test whether the PMIU would be more successful if steps were taken to increase access to the PMIU data, a pilot was conducted in Kasur, targeting 63 head teachers. The purpose of this pilot was to add two new routines at a *markaz* and *tehsil* level, so that education data could reach head teachers directly. Previously, discussions with AEOs had been the primary means through which head teachers had access to data. This pilot changed this by improving access at grassroots level. Similar to the results from head teachers collected from the surveys, 54 per cent of this new sample also listed messages by the AEO as their most significant means of receiving information. The remaining 29 per cent received messages from the DDEO and the rest had access to information through SMS, phone, written orders, monthly meetings, and emails. These numbers show that an intervention that focused on promoting access to data, which was the predominant goal of this pilot, was warranted.

Figure 23. Head teachers' response to 'How do you receive messages?'

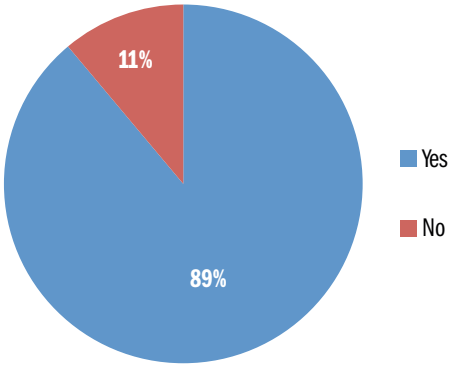


Prior to the launch of the pilot, 52 per cent of head teachers were unaware of the datapack of information provided to AEOs for PreDRC meetings, and 75 per cent did not even know that PreDRC meetings existed. This shows a strong need for greater awareness of the process of data collection and monitoring and evaluation of the education sector, among stakeholders and public alike.

The pilot established that a majority of head teachers agreed on the usefulness of AEO meetings and felt that these should be feature regularly in their work. Meetings with AEOs and head teachers of schools of the same *markaz* are designed for the discussion of monthly monitoring data. The positive opinion of head teachers concerning the productiveness of this initiative shows that the meetings help in spreading awareness,

engaging different members of the education structure, and improving coordination. Head teachers noted that receiving information from AEOs helped them guide their teachers better, and thus improve the learning of students and the overall standard of education. The meetings also act as an accountability mechanism – head teachers can learn about their mistakes and how to improve their performance. A two-way communication channel is established; head teachers can share the problems of their schools with AEOs and, in turn, be updated on the discussions conducted at the PreDRC meetings and other SED policies by AEOs. This makes future planning more efficient. Reasons given by those who felt the meetings were not useful included a concern that the time could be spent on the education of children and that the meetings did not solve the problems faced by teachers.

Figure 24. Head teachers' response to 'Is there a need for AEO meetings?'



Furthermore, these meetings improved the knowledge of head teachers far beyond the agenda they are supposed to cover. Some 81 per cent reported learning more than the prescribed list of items they were required to discuss. When asked to elaborate on the indicators they learned most about, a majority highlighted the impact of these meetings on their understanding of enrolment issues. Others highlighted the impact and positive outcomes of such meetings on other topics of discussion, such as security-related issues, admissions, attendance, LND, punishment, MEA behaviour, performance, group activities, and quality of education.

The participants also offered suggestions to broaden the agenda of these meetings. Some felt that the LND should be a more detailed topic of discussion, covering topics such as modern teaching techniques, the use of technology (including projectors and computers), and the best-practice strategies to achieve a 100 per cent result from students. Teachers achieving good results for LND can be viewed as a model; if they shared their approach then other teachers would be able to learn and improve their numbers as well. Others recommended more open-ended discussion of problems faced by teachers, so the overall burden on them can be eased. Topics specific to students should also be discussed, including how to improve their attendance and performance. Furthermore, some head teachers encouraged inviting Grade 3 teachers to these meetings, as much of the agenda applied directly to them and they could learn better by being involved.

In order to assess the challenges that may limit the success of these meetings and understand how feasible they are as a plan to be mainstreamed, participants were asked about the factors that affected or made their attendance difficult. Results for this question are particularly important for understanding the opinion of those head teachers who felt AEO meetings were not useful. Inconveniently timed or located meetings are the two major reasons that affect their willingness to attend such discussions. These responses show how such factors should be taken into account when the meetings are being planned, so they are feasible for a majority of attendees.

Figure 25. Head teachers' response to 'What are some of the other instructions given in meetings?'

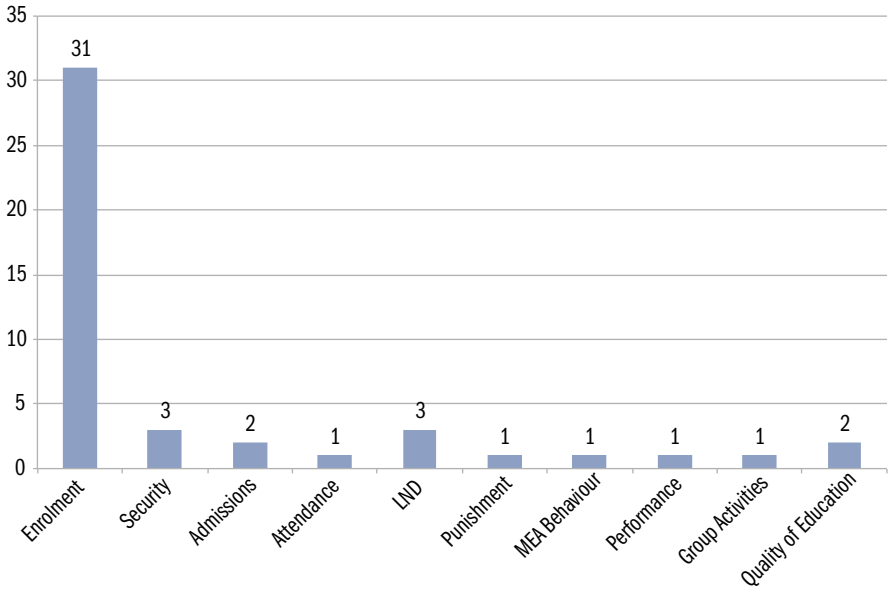
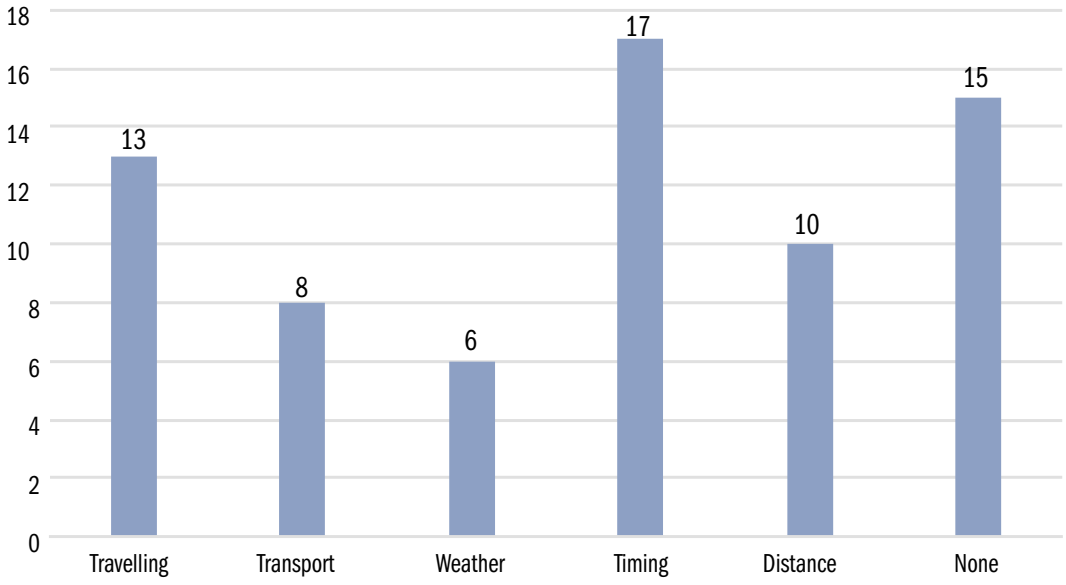
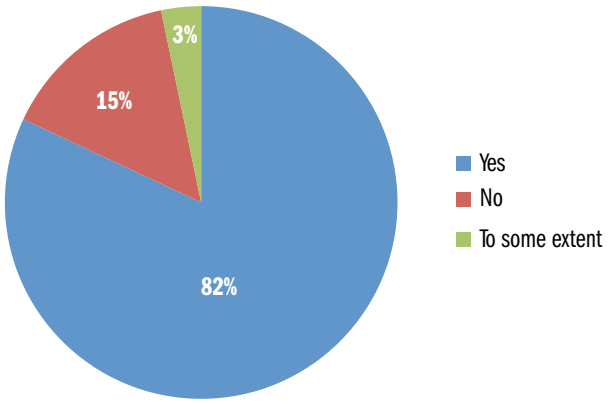


Figure 26. Head teachers' response to 'What are some of the challenges in attending these meetings?'



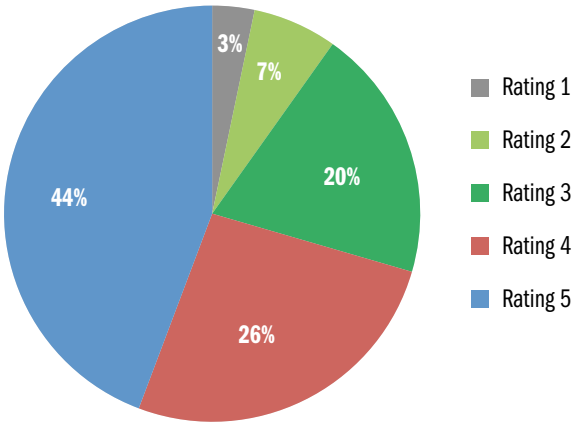
Overall, the Kasur pilot had extremely favourable results. Eighty-nine per cent of participants felt the meetings had improved their understanding of issues and helped them better discover solutions. In terms of improving analytical abilities, 48 per cent rated the pilot five out of five and 23 per cent rated it four out of five. Ninety-five per cent of head teachers agreed that the pilot helped increase their communication and coordination with AEOs and their fellow head teachers, and the same percentage felt that they were able to approach their fellow head teachers more openly concerning problems and in discovering solutions after attending these meetings. Ninety-two per cent of participants felt that the meetings had helped them think of strategies to improve the performance of students in their classes. Overall, 82 per cent of head teachers believed that such meetings were extremely important and fruitful. This figure could be raised even higher if greater effort were devoted to arranging appropriate timings and locations for these meetings, as more head teachers would be willing to participate if their convenience was considered.

Figure 27. Head teachers' response to 'Should there be such monthly meetings?'



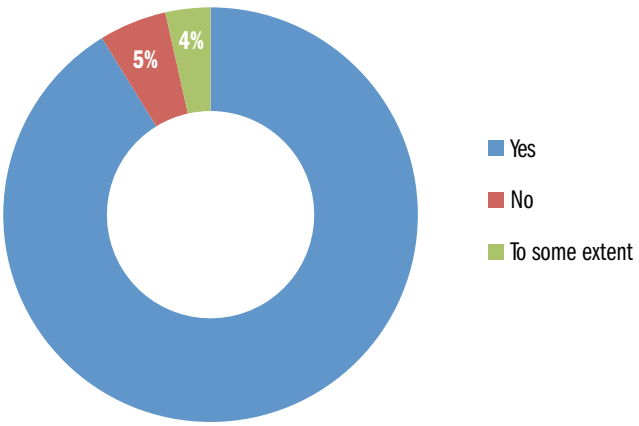
In summary, 44 per cent of all head teachers rated the pilot five out of five in terms of its effectiveness, while 26 per cent rated it four out of five.

Figure 28. Head teachers' rating of the effectiveness of this initiative



A total of 91 per cent of all head teachers were in favour of this routine being adopted by each DDEO in Punjab. Only three of the total participants responded negatively, and two showed some reluctance.

Figure 29. Head teachers' response to 'Are you in favour of adopting this routine?'



Following the pilot, head teachers were tested on their newly gained knowledge of the PMIU. Ninety-five per cent of respondents were able to correctly identify the number of indicators in the monthly datapack. They also displayed familiarity with the English SLOs tested during the LND test. This shows that the meetings succeeded in giving head teachers significant information that fostered their understanding of operations and the overall structure of education.

Overall, these positive results show the promise such an initiative can hold as a new strategy to make the PMIU more accessible to ordinary people, and consequently more successful. The SED has approved the scale-up of this pilot and the roll out of these new routines began in 2017 in 36 districts of Punjab. Similar pilots can be conducted once more of the factors that hinder the overall impact of the PMIU have been identified, in order to create a demand for such information, and improve transparency and accountability in the education sector.

In conclusion, open data initiatives such as the PMIU can have a significant impact in improving service delivery and management of education processes by reducing inefficiencies in the way they are conducted. Open data sources can help improve the accountability of education managers, consequently making members of the education bureaucracy more accountable to each other and subsequently making the government more accountable to the public. While government-led initiatives such as the PMIU do respond to the needs of the public and encourage citizens to give their feedback, there is still a wide gap in terms of consumption of data. Access to the PMIU is predominantly within the higher tiers of the education hierarchy, rather than the general public. This can be reduced by rethinking the way in which open data are published and how they reach the public. There is a need for a rebranding of open data sources and for a wider promotion of the benefits of their consumption among key stakeholders such as teachers, trainers, parents, and the general public. Education managers need to highlight the importance of data portals and how to use these data to improve public service delivery. To address the problems caused by low income and illiteracy, government-led initiatives such as the PMIU need also to establish forums at school level at which teachers can regularly brief parents about the progress of schools against key indicators.

This will not only make the system more transparent but will also enhance the trust parents and the general public have in education and public schooling. The more parents consume the data, the more engaged they will be in the system. Moreover, the process of data availability for researchers needs to be streamlined; the easier information is for researchers to access, the better able they are to develop and share valuable insights that can improve the education ecosystem. Nonetheless, the existence of an initiative such as the PMIU is a ground-breaking step for education, not only in Punjab, but also in Pakistan as a whole. It represents an example of a database that, in view of its impact in making delivery more transparent and efficient, should be adopted by provinces across the country.

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The case study

The number of countries providing access to school data to the general public has grown rapidly over the past decade, encouraged by the development of information technologies and under the pressure of social movements demanding the right to information. A wide variety of initiatives have been developed by both governments and civil society, to share school-level information in the form of 'school report cards'. These provide key information about a school, e.g. on student enrolment, funding, number of teachers, teacher qualifications, pupil–teacher ratios, conditions of school facilities, textbooks, and student achievement. But now that such data are in the public domain, how can it be ensured that they are used to promote not only transparency but also accountability in the education sector?

This case study compares the design and implementation of two major open school data initiatives implemented in Punjab, Pakistan – the school report cards developed under the Programme Monitoring and Implementation Unit, which is government-led, and the Annual Status of Education Report programme, which is citizen-led. It covers the types of information published, who publishes it and how it is accessed; the critical data for improving transparency and accountability; how different categories of stakeholders access and use it; the requisite conditions for improving transparency and accountability; and the limitations of such processes.

The publication concludes by highlighting the importance of open school data to improve performance management, but also the difficulty of making use of such data for the masses without internet access or who are not familiar with English. It concludes with a set of recommendations, including: bringing information directly to users through data packs or community level gatherings, involving community leaders and citizens in communication strategies, and giving community members a greater role in the data collection process.

The author

Kashmali Khan has 10 years of direct experience working with and supporting governments, in designing and leading major public sector transformation initiatives. She has successfully led large-scale reform and implementation projects in Pakistan. She recently led the Punjab Education Sector Reform Programme, in a 60,000 school system, with a focus on defining the system strategy and education priorities, and implementing provincial and district level interventions to improve access and participation. She studied Social Anthropology and Women's Studies at the University of Oxford.

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