

ANALYSIS OF EXTERNAL MONITORING AND EVALUATION SYSTEM TO PROPOSE A RATIONALIZED MODEL (INSTRUMENT) FOR THE SCHOOL EDUCATION DEPARTMENT IN PUNJAB-EXPLORATORY FACTOR ANALYSIS (EFA) OF THE INSTRUMENT

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Original Article

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ABSTRACT

The primary objective of the study was to run the exploratory factor analysis (EFA) on the instrument named analysis of external monitoring and evaluation system to propose a rationalized model (an instrument) for the school education department in Punjab. The instrument was made by the researcher from the body of broad literature. The study was instrumental in nature in which the researcher has to provide a reliable and valid instrument/ questionnaire/ scale to the study itself and to future researchers. The population of the study consisted of head teachers, SST, PST, MEAs, and CEOs of secondary schools. The questionnaire was filled out by the above-mentioned stakeholders. Cluster random sampling was used. The validity of the instrument was ensured through exploratory factor analysis (EFA) while the reliability was calculated through Cronbach's Alpha values. The findings of the study give a reliable instrument with a .843 Cronbach α reliability of the total scale. The findings also give the validity of the instrument composed of 6 factors that give 29 items in totality. Each factor has its own items. Further, in EFA, the KMO test showed that the data was sufficient to run the EFA successfully (KMO= .786, Bartlett's test of Sphericity $P=.000$). The Eigen values of the scale were ≥ 1 and the communalities values were $>.30$. The EFA showed that total 29 items were retained in the scale with six factors. That item should have been deleted from the scale if it did not saturate on any factor ($<.30$). It is recommended that the scale should be used for current and future studies. The scale should be exposed to other psychometric tests in Pakistan as well as in other countries to make it more reliable and valid.

Keywords: Monitoring and Evaluation, Framework, Quality Education, Exploratory Factor Analysis

1. INTRODUCTION

Countries with high literacy rates and robust education systems tend to excel in a variety of fields and are held in high esteem. The quality of any country's educational system determines the future of that country. Countries that are developed in all aspects of life have higher literacy rates and better educational systems. When compared to the educational systems and standards of other countries, Pakistan, which is a country that is still considered to be in the process of development, is very deficient (Khan et al., 2017).

The year 2003 marked the beginning of the implementation of educational reforms across Pakistan's provinces. In Pakistan, educational policy is determined at the provincial level. A little less than sixty percent of the entire population of the country is located in the province of Punjab, which has the distinction of being the most populous province overall. Because of the significant

contribution it has made, a program with the acronym PESRP (Punjab Education Sector Reforms Programme) has been formed to reform and improve the educational system in Punjab. The primary objectives of this initiative were to enhance the quality of education and to broaden access to it for all pupils. This program for the reform of the educational system aims to monitor and improve the quality of all elements of educational endeavors as its primary objective. According to this program, to achieve the objective of providing a quality education for all students, the mechanisms for holding teachers and other relevant authorities accountable need to be strengthened (Gouleta, 2015). In 2004, the Chief Minister of Punjab launched a monitoring system as part of an initiative to guarantee that schools in the province of Punjab maintain high levels of academic achievement.

The day-to-day activities of educational institutions are monitored by monitoring and evaluation assistants (MEAs). These individuals report to and take direction from the district monitoring officer (DMO). A once-a-month visit to primary, secondary, intermediate, and upper secondary schools for both boys and girls is something that each MEA is required to do. After that, they send a report to the Department of Education Secretary via the DMO. They check every institution in the province of Punjab to make sure that certain quality standards are being met, and they guarantee that those standards are being met. Based on the reports that have been obtained by all MEAs, various suggestions, findings, plans, and judgments have been formed to enhance excellence in education at all levels of institutions (World Health Organization, 2019). The primary purpose of management is to make the most of the resources (financial, human, and material) that are at one's disposal to simplify and expedite the process of achieving one's goals. Leadership, control, organization, and the recruitment and selection of workers are the four primary functions of management.

During this investigation, we will investigate the M&E system that the education department use, as well as build an instrument for the monitoring and evaluation system's overall architecture. As part of this research, the current M&E system will be scrutinized to determine its strong and weak points, as well as the degree to which it assists the organization in accomplishing its goals. After that, we will provide a proposal for a model framework that takes into account the most effective methods of M&E, as well as fixes the identified flaws in the existing system (Basheka & Byamugisha, 2015).

The framework that is being suggested would include key performance indicators and objectives, as well as methods of data collection and analysis, and reporting channels. It will seek to offer a comprehensive strategy for monitoring and analyzing the education system, with the end goal of empowering policymakers to make informed choices that have a beneficial influence on the quality of education provided to the community.

The ultimate purpose of this study is to provide the Department of Education with an instrument that management and evaluation systems both find useful and efficient. This instrument will give the department the ability to monitor progress, assess the influence of policies, and continually improve the education system.

2. REVIEW LITERATURE

In any effective education system, M & E plays a crucial role in assessing the quality of education and ensuring accountability. The external M & E system within the education department provides valuable insights into the strengths and weaknesses of educational policies, programs, and practices. However, to adapt to the evolving needs of the education landscape, it is essential to analyze the existing system and develop a new framework that fosters continuous improvement and accountability. This article provides the instrument for the current state of the external M & E system in the education department and proposes key elements for a new and enhanced framework.

Any educational system's primary goal is to equip students with the values, abilities, and knowledge required for productive involvement in society. The majority of nations maintain records that are primarily concerned with recording schools, students, resource inputs, and outputs in

terms of test results. Many nations, however, lack systematic data on educational results. An extensive monitoring and evaluation (M&E) strategy can be built on a framework that tracks learning outcomes to determine how well an educational system is doing over time (Brolin, 1997).

The framework can be used to keep track of learning on a global and national scale. The latter allows for country comparisons and can be used to track Sustainable Development Goal (SDG) progress. 4. Making sure that everyone has access to equitable, high-quality education at all levels is one of the key goals of M&E in education.

External monitoring and evaluation serve as important tools to gauge the effectiveness of educational initiatives and policies. By collecting and analyzing data from various stakeholders, including teachers, students, administrators, and parents, decision-makers can identify areas that require improvement and allocate resources accordingly. Moreover, it ensures transparency and accountability, allowing for evidence-based decision-making and fostering trust in the education system (Mandinach et al., 2006).

In addition to widespread use in Punjab (Pakistan), external and internal monitoring systems are implemented all over the globe. Three measures may be used to evaluate a school's effectiveness. The external supervision service, the school's internal assessment, and exams are the three primary methods available, according to (UNESCO, 2009), for monitoring the operation and effectiveness of a school. The most effective method of monitoring is a school visit. This provides a means for the administration to evaluate how well schools are meeting their stated goals.

The majority of educators are resistant to external monitoring, according to UNESCO study studies from 2009. Evidence from studies of school supervision in Africa (Chowa et al., 2013; Achhnani & Amareliya, 2020; Bruinsma et al., 2021) reveals that neither teachers nor administrators are happy with the results of such monitoring in the classroom. Due to their administrative responsibilities, educational supervisors have a limited amount of time to spend on school inspections, highlighting the necessity for independent oversight. The New Zealand government uses school self-evaluation and external reviews to guarantee a high standard of education. There is a set of rules that all schools must observe. The goals of educational policy and curriculum planning are to foster education (Zguir et al., 2021). Creating a thorough monitoring and assessment system is the first stage in such changes toward conceptualizing, designing, and implementing effective teacher policies (Madani, 2019).

The existing system should encourage the meaningful involvement of stakeholders, including teachers, parents, and students, to provide valuable perspectives and insights into the evaluation process. The evaluation framework should encompass various dimensions of education, such as curriculum, teaching methodologies, student outcomes, infrastructure, and equity, to provide a holistic view of the education system's performance. Regular monitoring and evaluation cycles are essential to capture ongoing progress and challenges. The current system should ensure timely and frequent evaluations to identify emerging issues and allow for swift corrective actions. The evaluation framework should prioritize capacity building among evaluators, ensuring they possess the necessary skills and expertise to conduct rigorous and objective assessments.

2.1. DEVELOPING A NEW FRAMEWORK (A NEW INSTRUMENT)

To improve the quality of education, we must enable a benchmarking system to determine current learning levels and future learning aims; and set up mechanisms to ensure and monitor various responsibilities, all while supporting teacher quality. Policymakers must consider each aspect of the education system in defining an appropriate reform that will provide an inclusive and holistic approach to proposed a rationalized framework for improving educational outcomes. The new framework should focus on outcomes and the impact of educational interventions, rather than solely relying on inputs and processes. This shift will enable a results-driven approach and facilitate evidence-based decision-making. The new framework should incorporate diverse perspectives and ensure the inclusion of marginalized groups, promoting equity and fairness within

the evaluation process. Enhancing the external monitoring and evaluation (M & E) system in the education department is crucial for driving educational improvement and ensuring accountability. By analyzing the current system and developing a new framework (an instrument), policymakers can address its limitations and leverage opportunities. Implementing a robust monitoring and evaluation framework (an instrument) will empower decision-makers to make informed choices, allocate resources effectively, and create an inclusive, equitable, and high-quality education system for all learners.

2.2. RESEARCH OBJECTIVES

1. To conduct the exploratory factor analysis (EFA) of the instrument named *analysis of external monitoring and evaluation system to propose rationalized model for school education department Punjab*.
2. To identify the strengths and weaknesses/ limitations of the said study instrument

3. RESEARCH METHODOLOGY (POPULATION, SAMPLE & PROCEDURE)

The study was instrumental in nature in which the researcher has to provide the reliable and valid instrument/ scale to the current and future studies. The population of the study consisted of head teachers, SST, PST, MEAs, and CEOs of secondary schools. The cluster random sampling was used. The validity of the instrument/ scale was ensured through exploratory factor analysis (EFA) while the reliability was calculated through Cronbach's Alpha values. The information about population size were taken from official website of the government of Punjab. Population of the study consisted of all the Head Teachers, SSTs, PST teachers in secondary schools, Monitoring and Evaluation Assistants (MEAs), District Education Officer (Secondary Education), Chief Executive Officer CEO, District Monitoring Officer of 36 districts of Punjab. Multistage and cluster random sampling were used. The sample of the study comprised; twenty (20) secondary schools heads, twenty (20) MEAs from each district, three (3) SSTs and two (2) PSTs from each Secondary School, three (3) administrative officers CEO, DEO (Sec.) and DMO. The total sample comprised four hundred and twenty-nine (429).

The researcher developed instrument/ scale for head teachers and teachers for data collection. The survey questionnaire for Head Teachers and teachers were having the same items; the self-developed survey questionnaire was consisting of Demographics and Closed-ended questions. Secondly, a survey questionnaire was developed for the MEAs. The data was collected through questionnaires. The researcher herself collected the data. Data were collected personally and through mail. Mostly questionnaires were distributed and collected by the researcher herself. The mailing system was also used where it was needed and appropriate.

3.1. DATA ANALYSIS (FINDINGS)

3.2. Reliability of the scale by using Cronbach α Values

Table1. Factor wise and total scale reliability

Factors	Items	Cronbach α
Fund_Acc_Ass	5	.719
Q_Edu	8	.714
Att_Absnt	3	.643
Imp_G_Sch	3	.560
Incl_Mon_SDG	5	.638
AV_M_Book	5	.636
Total Scale	29	.843

3.3. Validity of the Scale using EFA (Exploratory Factor Analysis)

In SPSS, the scale was validated through EFA. The items were loaded on total six factors. Factor Fund_Acc_Ass give the 5 items. Factor Q_Edu gave the 8 items. Factor att_absnt gave the 3 items. Factor Imp_G_sch gave the three items. Factor Incl_Mon_SDG gave the 5 items. Factor AV_M_Book gave the 5 itmes. The KMO test showed that the data was sufficient to run the EFA (KMO= .816, Bartlett's test pf Sphericity P=.000). The variance (Eigen value) of the scale was

1.219 to 4.140 and the communalities values were greater than .30. The EFA result showed that total 29 items were retained in the scale with six factors. That item should be deleted from the scale if it did not saturate on any factor (<.30). The EFA procedure is shown in the following table.

Table2. EFA (Exploratory Factor Analysis)

	Component					
	1	2	3	4	5	6
Q_Edu33	.751					
Q_Edu34	.664					
Q_Edu36	.582					
Q_Edu32	.575					
Q_Edu35	.566					
Q_Edu31	.433					
Q_Edu29	.401					
Q_Edu30	.324					
Fund_Acc_Ass50		.68				
		5				
Fund_Acc_Ass45		.67				
		8				
Fund_Acc_Ass51		.67				
		6				
Fund_Acc_Ass49		.66				
		0				
Fund_Acc_Ass46		.64				
		4				
AV_M_Book17			.716			
AV_M_Book15			.633			
AV_M_Book14			.596			
AV_M_Book18			.595			
AV_M_Book16			.536			
Incl_Mon_SDG_EG63				.703		
Incl_Mon_SDG_EG62				.638		
Incl_Mon_SDG_EG64				.628		
Incl_Mon_SDG_EG61				.585		
Incl_Mon_SDG_EG59				.528		
Imp_G_Sch24					.727	
Imp_G_Sch22					.640	
Imp_G_Sch26					.595	
Att_Absnt3						.809
Att_Absnt4						.793
Att_Absnt5						.525
Eigen Values	4.140	3.0	1.679	1.528	1.397	1.219
		27				
% of Variance explained	14.27	10.	5.790	5.268	4.819	4.205
	7	43				
		9				
Cumulative % of Variance explained				44.798		

Extraction Method: Principal Component Analysis. Rotation Method: Promax with Kaiser Normalization. Rotation converged in 6 iterations.

4. DISCUSSION

The discussion revolves around our scale reported here about the M & E system in educational facilities. We wanted to build a rationalized frame (instrument) on the basis of which the students, teachers, educators, policy makers, and researcher could get a reliable and valid data. Further,

this scale will yield a reliable performance to governing body if they used it for their financial measures.

Extensive literature was reviewed for the current scale in different contexts to come up with a new rationalized frame (instrument) for M & E system in the education department of Punjab province schools. In the first manuscript of the draft 9 factors with 64 items were selected for the instrument but later on the exploratory factor analysis were applied and only 6 factors were retained by removing the redundant 3 factors. Also the 29 items were successfully retained by removing the redundant items from the instrument.

In EFA (exploratory factor analysis), the KMO test showed that the data was sufficient to run the EFA successfully (KMO= .786, Bartlett's test of Sphericity $P=.000$). The Eigen values of the scale were ≥ 1 and the communalities values were $>.30$. The EFA showed that total 29 items were retained in the scale with six factors. That item should have been deleted from the scale if it did not saturate on any factor ($<.30$). The EFA provided us with the satisfactory factor structure of the current scale.

The reliability of the scale was also in acceptance range for the total scale ($\alpha=.843$) and for the subscales i.e., Q_Edu ($\alpha=.714$), Fund_Acc_Ass ($\alpha=.719$), AV_M_Book ($\alpha=.636$), Incl_Mon_SDG ($\alpha=.638$), Imp_G_Sch ($\alpha=.560$), and Att_Absnt ($\alpha=.643$). Only one factor i.e., Imp_G_Sch got lesser internal consistency value ($\alpha=.560$) than .600.

- i. Factor Q_Edu represents the quality of education, which is loaded as 1st factor.
- ii. Factor Fund_Acc_Ass represents the use of funds and accountability assurance, which is loaded as 2nd factor.
- iii. AV_M_Book represents the availability of literacy numeracy material and free textbooks, which is loaded as 3rd factor.
- iv. Incl_Mon_SDG represents developing an inclusive monitoring framework for sdg 4 and advancing education goals, which is loaded as 4th factor.
- v. Factor Imp_G_Sch represents improvement in the governance of the school, which is loaded as 5th factor.
- vi. Factor Att_Absnt represents the head, staff attendance, student attendance, and absenteeism, which is loaded as 6th factor

4.1. CONCLUSION

A rationalized model (i.e., an instrument) for the school education department in Punjab has been provided with six factors yielding to 29 items in total. The instrument was made by the researcher from the body of broad literature. The validity of the instrument was ensured through exploratory factor analysis (EFA) while the reliability was calculated through Cronbach's Alpha values.

It is recommended that the scale should be used for current and future studies. The scale should be used by the stakeholder in the education department in Punjab specifically and in Pakistan and in other countries generally when a reliable and valid data is needed in the field of M & E system.

4.2. RECOMMENDATIONS

The analysis is showing that the current scale will provide best practices and effective information in the educational system. Goals of the current scale should be identified and disseminated. institutions, educators, and leaders who are doing research on M & E system should be informed about the current scale and its usage. Schools, teachers, and administrators should test it further reliability and validity for standardized test scores and for academic success. This will foster healthy development of the current scale. The said scale should be used for the indications for evaluating system performance for M & E in education departments at the school level in Punjab but it can be used throughout Pakistan as well. At the national and local levels, policymakers, the general public, administrators, educators, and parents can use this scale for the evidence for

student learning assessments to judge how well students are currently performing about their learning objectives and how well their educational goals are being met. Through this scale, it is important to assess how well the M & E framework is working and what areas need improvement regularly.

5. STRENGTHS AND WEAKNESS OF THE INSTRUMENT (STUDY LIMITATIONS)

Each study has certain limitation and same is our case. Although our study is conducted in Punjab province of Pakistan but the other provinces can also take this scale and use it in their perspective for examining the M & E systems in their schools. Other countries can also take the scale and pass it through advance statistical tests to strengthen its reliability and validity. Gather input from outside researchers by showing unbiased assessments or evaluations of the scale can further improve its psychometric properties. To assurance a stable phase of improvement in the current instrument, any required changes are welcomed from the national and international researchers.

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