



## Education Management Information Systems in High Schools of Balochistan: A Case Study of District KECH

**Asgahar Ali**

*Ph.D. Scholar, Department of Education, Greenwich University Karachi, Pakistan.*

[Balochasghar36@gmail.com](mailto:Balochasghar36@gmail.com)

**Victoria Joseph**

*HOD. Department of Education. Greenwich University Karachi, Pakistan*

[drvictoriajoseph@grenwich.edu.pk](mailto:drvictoriajoseph@grenwich.edu.pk)

**Zia Ul Haq Kakar**

*Ph.D. Scholar, Department of Education, Greenwich University Karachi, Pakistan*

[Ziakakar09@gmail.com](mailto:Ziakakar09@gmail.com)

### Abstract

*The utilization and advancement of information and communication technologies (ICTs) have made significant contributions to the improvement and innovation of educational institutions such as schools, colleges, and universities in Balochistan. The Management Information System (MIS) has played a vital role in accelerating managerial functions, leading to effective and result-oriented decision-making in the educational paradigm. This research aimed to explore the issues and challenges related to the Education Management Information System (EMIS) in Balochistan.. The study had two main objectives: firstly, to evaluate the internal dynamics of EMIS in Balochistan, including data collection, installation, storage, and distribution processes, and secondly, to propose a plan of action for the establishment of a comprehensive and functional EMIS in Balochistan that meets the information requirements of decision-makers at different levels. Explanatory sequential mixed methods were employed as the research design, with a population of 31 EMIS cell data entry operators in District Kech, Balochistan. Cluster random sampling was used to select a sample size of 100% (09) data entry operators from the primary EMIS cell of District Kech. Data collection was conducted through a five-point Likert scale questionnaire and an interview guide. Quantitative data were analyzed using descriptive statistics (percentage, frequency, mean score), while qualitative data were analyzed using thematic analysis. The study findings revealed that 67% of the respondents agreed that the need for data was determined during meetings with stakeholders, while 100% of the respondents believed that the annual school census was the primary source of data collection. Additionally, all respondents reported collecting data from primary, middle, and secondary schools. Respondents also stated that the district's EMIS cell was the main source of data entry and that data verification was done at the district level. Furthermore, respondents cited wrong entries as the main issue related to data entry, and data dissemination was primarily done at the district level. The study recommends the establishment of well-furnished EMIS cells in each district, the systematic training of data entry operators and concerned officers and staff, and the streamlining of EMIS data to support policy-making and service delivery in institutions.*

**Keywords:** *EMIS, Management Information, Educational Paradigm, Data Entry Operator, Collecting, Processing, Storing, Utilizing.*



## Introduction

Education is widely recognized as an indispensable factor for a country's socioeconomic advancement. Investment in education is associated with population growth and is crucial for generating high incomes and long-term economic prosperity. Education promotes proficiency, skills, and enlightenment in a society, thereby enhancing self-sufficiency and aiding in the resolution of health issues as well as the development of human skills. A well-grounded education system can improve market productivity and enhance the quality of life at home (Ali et al., 2021).

Despite implementing various policies and reforms since 1947, the Pakistani government has failed to achieve the desired outcomes due to inadequate monitoring and evaluation methods, insufficient resources, and a fragile framework. Educational priorities have also been subject to frequent changes. Among the challenges, the primary obstacle to achieving educational goals is the lack of effective and steadfast materials necessary for inquiry, development, implementation, and monitoring of effective procedures (Helal, Ahmed & Bhuiyan, 2021)

Education Management Information Systems (EMIS) has been a crucial part of the education sector, especially in developing countries like Pakistan (Naseer & Tariq, 2021). EMIS is an integrated computer-based system that manages the educational data of schools, teachers, and students. In recent years, the use of EMIS has increased in the educational sector of Pakistan, particularly in Balochistan, where the government has initiated several programs to improve the quality of education. District Kech is one of the underdeveloped districts of Balochistan, where the education sector has been facing numerous challenges, including inadequate resources, insufficient facilities, and a lack of trained personnel (Naseer & Tariq, 2021).

The Education Management Information System (EMIS) is a secure data management system that protects stored data from destruction and damage. It implements various security measures to prevent unauthorized access, alteration, or deletion of data. EMIS allows for data to be sorted and organized multiple times to ensure its relevance and value. The system ensures authorized users can access the data they need through efficient retrieval. EMIS plays a crucial role in facilitating effective decision-making in academic organizations by providing a secure, organized, and easily accessible data management system.



## **Statement of the Research Problem**

To test education, the nation needs information about the education system, its resources, inputs, governance, outcomes, and performance, EMIS can manage a variety of data, such as education, administration, and demographics. In addition, this learning data includes teacher assessments, assessment and student achievement, curriculum performance, and other information used for the continuation of any educational institution. There are many barriers to the effective implementation of EMIS in Pakistan to achieve quality education. The study was designed to analyze the internal variability of EMIS Balochistan to collect data, store, disseminate, and, compile a set of policymaker's recommendations to improve the effectiveness and efficacy of EMIS Balochistan

## **Significance of the Study**

This study has groundbreaking importance as the perspectives of EMIS Balochistan. It has analyzed and provided an understanding of the overall structure of EMIS internal dynamics, which emphasizes the strengths, flaws, opportunities, and threats integrated with the system. These research findings may also provide food for our teachers, policymakers, and future researchers with thoughtful food to come up with an effective and long-term plan to alleviate the challenges EMIS Balochistan faces and to use the available information to implement better education policies.

## **Objectives of the Study**

The objectives of the study were:

- I. To Assess the internal dynamics of EMIS, s Balochistan regarding data collection, installation, storage, and distribution process.
- II. To propose steps for the establishment of an effective and comprehensive EMIS Balochistan, which meets the knowledge needs of decision-makers at various levels.

## **Research Questions**

- I. What methods and processes are used by EMISs Balochistan for data collection, installation, processing, and distribution?
- II. What are the ways and means to strengthen EMISs in Balochistan to improve the data quality?



## **Review of Literature**

The literature review is a crucial component of the research process, as it enables researchers to gain knowledge from previous studies and reduce the consumption of time, human resources, and finances. In this study, the researcher undertook a comprehensive review of the literature available on EMIS and its applications in education, planning, growth, and employment policies. Systematic reviews are essential for the successful completion of any study. Extensive literature reviews on EMIS can be accessed on various platforms, and many studies have been conducted to assess its scope and effectiveness in addressing education-related issues faced by authorities.

Cuartero and Role (2018) highlighted the role of EMIS in saving resources and focusing on education policy outcomes. The study aimed to evaluate the capacity of EMIS in Balochistan in terms of data collection, installation, storage, and distribution processes. Helal, Ahmed, and Bhuiyan (2021) pointed out that EMIS was established in several developing countries with financial and technical assistance from international organizations. However, following the loss of donor financing, these organizations faced technical and budgetary challenges in functioning effectively.

According to Ali et al. (2021), EMIS is a system that integrates educational information planning and management activities from various sources. It provides information for all three levels of educational management and helps managers make informed decisions about planning and the delivery of educational resources. Low-level managers use this knowledge in operational decision-making, middle-level managers in skill-based decision-making, and senior management in strategic decision-making. EMIS also provides information on financial and human resources and learning outcomes to school administrators (Abdul-Hamid, 2014).

EMIS provides clear, relevant, reliable, and integrated data required for the planning, implementation, monitoring, and evaluation of various school-related jobs (Cuartero & Role, 2018). Cassidy (2006) emphasized the importance of monitoring progress towards policy objectives, as it helps school managers in policymaking, budget decisions, and monitoring. Additionally, EMIS provides tangible evidence that helps improve the functioning of well-performing units and upgrade those that are not efficient enough. EMIS is a powerful program that enhances the performance of educational managers at any level and presents effective solutions to problems and challenges (Ali et al., 2021).



To meet the changing information needs of organizations, managers must establish and maintain a process and procedure for active data collection and evaluation that ensures the timely delivery of information to decision-makers (Wako, 2003). However, despite efforts to plan for effective decision-making, government agencies face challenges in developing a knowledge-based culture that can utilize the assessments offered by the Education Management Information System (EMIS). The institutional structure of data collection and analysis, as well as the information flow within the organization, are critical factors that must be considered in addressing this issue.

Although EMIS data is commonly used at the national level for planning, budgeting, and resource allocation in many countries, it is rarely used for the day-to-day management of education systems at the institutional (school) level. However, using EMIS data can enhance the functionality of day-to-day management by providing transparency, improving the quality of management, and generating quality data for monitoring and evaluation. To be effective, EMIS data must be made accessible at all levels of decision-making. UNESCO has classified three key data levels that correspond to the activities of the three levels of interdisciplinary education management programs, and utilizing data at a high degree of detail and classification can reduce the level of decision-making, bringing it closer to the school level.

Managers make different types of decisions, such as performance, management, and strategy. Operational decisions address day-to-day issues that affect part of the organization's operations, while management decisions relate to the personal and financial performance of the organization. Strategic decisions are related to long-term goals and resource allocation (Lucas, 1990, p. 33). Decision-making in modern classrooms is faster, more prevalent, and more sophisticated. Therefore, continuous, modern, and accessible data collection, analysis, and application are necessary to make informed decisions in these settings. Data-driven decision-making is critical to the success of school development programs, but school administrators often struggle to use data effectively (27, 14, 15).

The literature also discusses the various reforms and policies that have been implemented by the government of Pakistan to transform its educational sector. These include the All Pakistan Education Conference 1947, Pakistan Education Conference 1951, Commission on National Education 1959, Commission on Student Problems and Welfare 1966, New Education Policy 1970, Education Policy 1972-80, National Education Policy 1979, National Education Policy



1992, National Education Policy 1998-2010, and Education Sector Reforms 2001-2005. The significance of EMIS has been recognized in many of these policies, and a brief policy assessment of EMIS in Pakistan is provided.

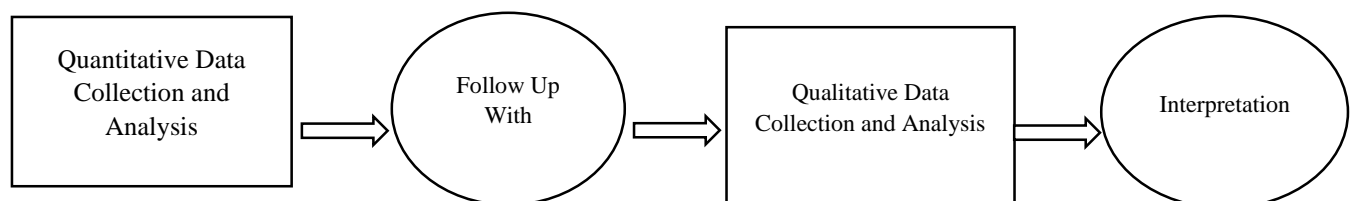
### Research Methodology

This study employs a mixed-method research design, specifically the explanatory sequential mix method, which combines quantitative and qualitative approaches to facilitate a comprehensive understanding of the research subject. The study is primarily focused on high schools in District Kech, Balochistan. The data collection process involves the use of surveys, interviews, and document analysis. The survey instrument is administered to education managers, teachers, and students to evaluate their level of familiarity and utilization of the Education Management Information System (EMIS). On the other hand, the interviews are conducted with education managers and teachers to gain insight into their perceptions of the EMIS system. Additionally, document analysis is conducted to assess the quality and availability of data in the EMIS system.

The sample size for this study comprises n data entry operators who were selected through a cluster random sampling technique from the population of 31 District Kech EMIS cells data entry operators. Quantitative data collected through questionnaires will be analyzed using descriptive statistics, while the qualitative data obtained through the interviews will undergo thematic analysis. This methodical approach to data analysis will provide a deeper understanding of the research topic, enhance the accuracy of the findings, and ensure that the research objectives are achieved.

### Research Design

The design for the study was explanatory sequential mixed methods, (also called a two-phase model; Creswell & Plano Clark, 2011). This design consists of two phases. The researcher collects quantitative data at first, followed by qualitative data collection that helps to explain and elaborate the quantitative results. It is illustrated in the following:





## Population

Population refers to the collection of people with similar characteristics. Such as teachers in a school or area constitute the population of teachers, and administrators of high schools in a district or city constitute the population of administrators (Creswell, 2012). The study's population comprised 31 District Kech EMIS data entry operators who worked on 09 EMIS cells in District Kech. Data entry operators are in charge of managing EMIS at the federal, provincial, and district levels in Pakistan. They are primarily in charge of collecting, entering, processing, storing, retrieving, and disseminating educational data at various organizational stages.

## Sampling Technique

The sampling technique for the study will be purposive sampling. In addition, Ary et al (2010) say that in cluster sampling, “the unit chosen is not an individual but, rather, a group of individuals who are naturally 20 together. A common application of cluster sampling in education is the use of intact classrooms as clusters”.

## Sample

The sample consisted of 100% (09) data entry operators working at the District Kech main EMIS cell. The detail is as under:

Table 1  
Sample

S/No	EMIS Name	No of Data Entry Operator	Percentage
1.	EMIS Main Cell District Kech	09	(100) % 09

## Instrumentation

The researcher has created two self-structured instruments. At first, a five-point Likert scale questionnaire with alternatives such as strongly agree (SA), agree (A), Undecided (UN), strongly disagree (SA), and disagree (SA) (DA) along with interview guide with open-ended options.



### **Validity**

Validity measures the truth or falsity of the data obtained from research instruments (Burns & Grove, 2001). Content validity was done by a review of pertinent literature, conversation with experts, and the researcher's personal.

### **Reliability**

The degree of consistency with which an instrument measures an attribute is referred to as its reliability (Polit & Hungler, 1999). According to Cohen and Morison (p.7), a questionnaire is regarded as very credible if the Cronbach Alpha range is 0.80-0.90. The questionnaires' reliability was tested using SPSS software. Cronbach's Alpha was used to determine the reliability of questionnaires to assess the level of internal consistency and stability of the items in the instrument. The overall coefficient for the instruments was.90.

## **Conclusion and Recommendation**

### **Conclusion**

The findings of the study concluded that accessibility of relevant, authentic, solid, and verified management information is a need of time for every institution at any level, where it provides an administrator to take information-based decisions (Alshamsi, et al., 2020). This study has discovered the overall internal dynamics of EMIS at the district level and identified critical problems related to data collection, data entry, storage, and dissemination. A set of questionnaires were generated at the district level to collect data. These questionnaires were distributed to the concerned institutions and their functionaries for filling. After the filling, these questionnaires were collected by EMIS in the stipulated time. After that, the process of data entry took place, where data were verified and disseminated to the institutions at the district, provincial and national levels.

### **Recommendation**

1. It is recommended that a well-established and centralized EMIS has to be launched at the district level, to improve the overall internal dynamics of the EMIS. It further realized that an assessment of defects and deficiencies of data collection, entry, storage, and dissemination must be carried out and certain steps has be taken to deal with this said





issue to make it a more functional, reliable, and result-oriented management information system.

2. Regular training sessions should be organized for data collectors, data entry operators, and other stakeholders involved in the EMIS. These training sessions should focus on improving their skills and knowledge related to data collection, data analysis, and data interpretation.
3. A data quality assurance mechanism should be put in place to ensure the accuracy, completeness, and consistency of the data collected. This could be achieved through regular data verification exercises, data audits, and data cleaning activities.
4. A data dissemination strategy should be developed to ensure that the data collected is shared with relevant stakeholders in a timely and accessible manner. This could include developing user-friendly dashboards, reports, and other data visualization tools.
5. Monitoring and evaluation mechanisms should be put in place to track the progress of the EMIS implementation and to identify areas for improvement. This could include regular feedback mechanisms from stakeholders, periodic data reviews, and impact assessments.

By implementing these additional steps, the EMIS can be made more effective and reliable, leading to better decision-making and improved educational outcomes.

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