

Quality Data of EMIS in Bhutan

Situational Analysis Study Report



DRUK GYALPO'S
INSTITUTE



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Acknowledgment

Ministry of Education and Skills Development

We acknowledge the valuable feedback and recommendations on this report by the officials of the
the Ministry of Education and Skills Development (MoESD), Royal government of Bhutan.

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Royal Office of Media Tech

We acknowledge the use of this report by the Royal Office of Media Tech (ROMTech), Thimphu, Bhutan. ROMTech is involved in revamping Bhutan's EMIS.

Dzongkhag (District) Education Sector and Schools

Last but not least, we acknowledge the representatives of 20 Dzongkhag Education Sectors and 266 schools who participated in this study.

World Bank Group

We appreciate Dr. Husein Abdul-Hamid, Senior Education Specialist at the Education Global Practice, World Bank Group, for granting us permission to use the SABER-EMIS Tool in this study.

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Recommended Citation

Tshering, G. (2025). *Quality data of EMIS in Bhutan: Situational Study Report*. International Development Research Center, Ottawa, Canada.

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The views expressed herein do not necessarily represent those of IDRC or its Board of Governors.

Acknowledgement

This work was supported by the Global Partnership for Education Knowledge and Innovation Exchange, a joint endeavour with the International Development Research Centre, Canada.

ISBN: 978-99980-735-2-4

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Executive Summary

Context

Paro College of Education, Royal University of Bhutan, and Druk Gyalpo's Institute secured an international grant to enhance Bhutan's Education Information System (EMIS) and explore its integration with Motherboard—an advanced system capable of generating qualitative data on student performance. The project, *Enhancing Data Utilization and Decision-Making in Bhutan's Education System: Motherboard Integrated Education Monitoring and Information System (MIEMIS)*, is funded by the GPE KIX grant (<https://www.gpekix.org/project/enhancing-data-utilization-and-decision-making-bhutans-education-system-motherboard>).

As a first step, a situational analysis was conducted to assess the current state of Bhutan's EMIS and inform the design of relevant interventions. This study applied the Systems Approach for Better Education Results (SABER) framework and SABER-EMIS tools, engaging 266 schools, 15 Dzongkhag Education Officers, and key stakeholders from the Ministry of Education and Skills Development, including the Policy and Planning Division, Education Monitoring Division, and STEM and ICT Division. Additionally, stakeholders from the Government Technology Agency were consulted.

The study examined four key policy areas influencing EMIS: enabling environment, system soundness, data quality, and utilization for decision-making. This report focuses on the *quality data*, which comprises four factors: (1) Methodological Soundness, (2) accuracy and reliability, (3) integrity, and (4) periodicity and timeliness.

Each factor includes sub-factors with specific criteria assessed at the school, district, and ministry levels. The evaluation employed a four-level scale: Latent, Emerging, Established, and Advanced, with definitions varying across each level.

Findings

Overall, Quality Data is rated as *Established*, determined by averaging the benchmarks of its major factors.

- At this level, the system has most of the necessary mechanisms to collect, store, and produce timely, high-quality information for informed decision-making.
- Foundational elements, such as methodological soundness, accuracy, reliability, integrity, periodicity, and timeliness, are well-developed and functional, enabling the production of largely reliable and useful data.
- However, additional measures are required to ensure complete accuracy, security, and timeliness.

- While the system has made significant progress, it has not yet reached the *Advanced* level, where all necessary mechanisms are fully established to guarantee consistent collection, secure storage, and accurate utilization of high-quality information.
- Implementing the recommendations outlined in this chapter would help address these gaps, enabling the system to support effective and informed decision-making processes consistently.

The table below presents an overview of the ratings for the individual factors of Data Quality.

Scale (1=Latent, 2=Emerging, 3=Established, 4=Advanced)	1	2	3	4
Data quality			X	
Methodological soundness			X	
Concepts and Definitions			X	
Classification			X	
Scope		X		
Basis for Recording			X	
Accuracy and Reliability		X		
Source Data		X		
Validation of Source Data			X	
Statistical Techniques		X		
Integrity			X	
Professionalism			X	
Transparency			X	
Ethical Standards		X		
Periodicity and Timeliness			X	
Periodicity			X	
Timeliness			X	

As indicated in the table, each factor is rated on the four-level scale, indicating specific strengths and areas for improvement, which are further discussed in this report.

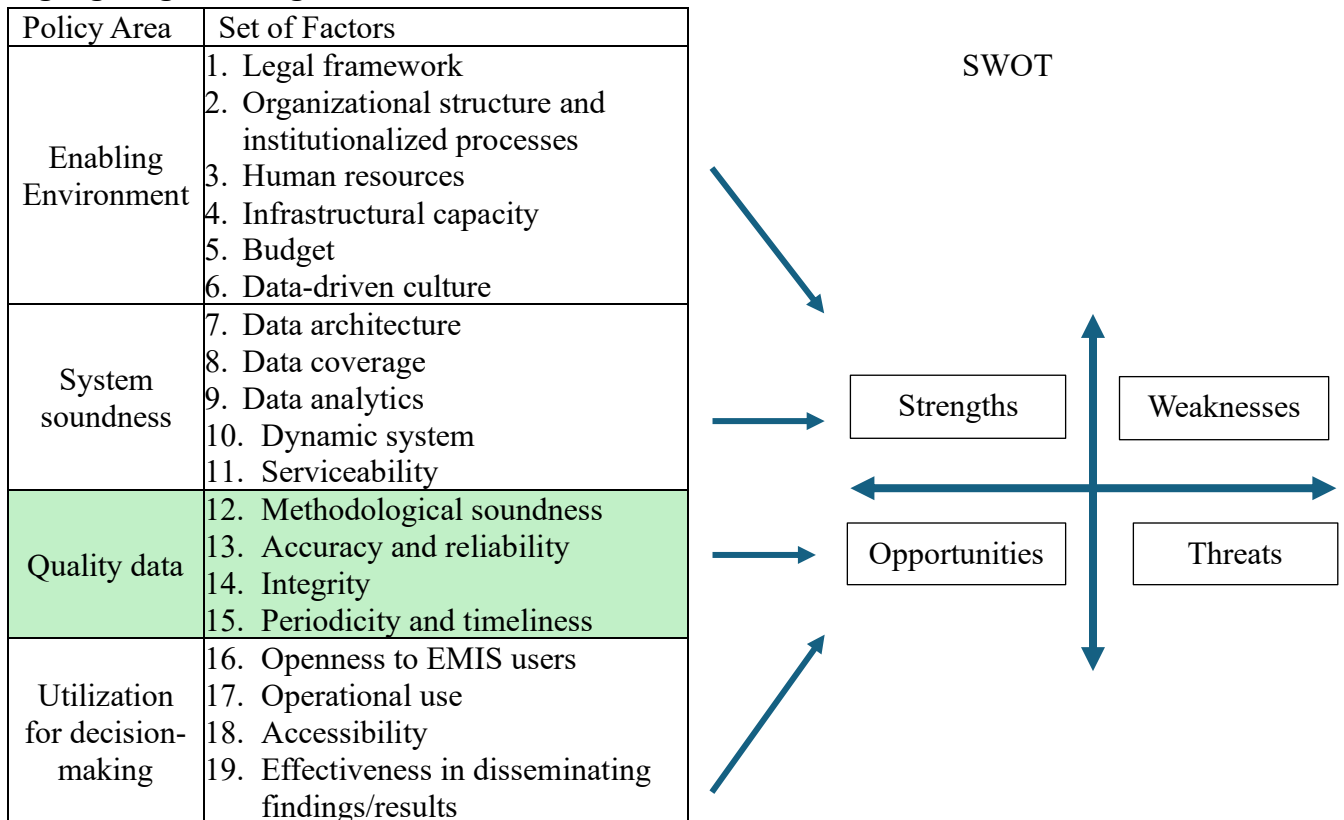
Note: We strongly recommend that readers review Annexure 1 before proceeding with this report.

Quality Data

1.1 Introduction

Data quality refers to a system equipped with mechanisms to collect, store, produce, and utilize information, ensuring accurate, secure, and timely high-quality data to support decision-making. Figure 4.1 identifies five critical factors that contribute to data quality: methodological soundness, accuracy and reliability, integrity, periodicity, and timeliness. Each factor is composed of specific items and variables that collectively represent the overall quality of the data. These factors are analyzed by examining general trends, evaluating items individually, identifying key inconsistencies, and offering actionable recommendations to enhance the enabling environment.

Figure 1.1
Highlighting Enabling Environment



1.2 Data Analysis, Findings, and Interpretations

The data analysis process was conducted systematically to uncover meaningful insights and provide a comprehensive understanding of the dataset. The analysis was structured around three primary components: general trends, item-by-item evaluation, and a SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis. Each component provided a unique perspective on the data, offering a broad overview and detailed insights into specific elements.

The general trends analysis identified overarching patterns and themes across the dataset, highlighting centralized practices, discrepancies in acknowledgment across operational levels, and areas of strong performance or potential gaps. The item-by-item analysis delved into specific components or indicators within the data, providing a granular understanding of the responses and their implications. The study also presents key contradictions. Finally, the SWOT analysis synthesized findings to identify strengths and opportunities while addressing weaknesses and threats, offering strategic insights for improvement.

The analytical approach summarized and interpreted the data exclusively using descriptive statistics. This method was chosen to present the results in an accessible and straightforward manner, enabling clear communication of key findings and their implications for policy, practice, and future decision-making.

1.3 Methodological Soundness

General Standard: The methodological basis for producing educational statistics from raw data follows internationally accepted standards, guidelines, and good practices.

1.3.1 Concepts and Definitions

Standard: Data fields, records, concepts, indicators, and metadata are defined and documented in the official operations manuals along with other national datasets and endorsed by the government.

Benchmark ⇒ Latent Emerging Established Advanced



Concepts, data fields, records, indicators, and metadata are well-documented and included in official operations manuals. These definitions align with other national datasets and have been endorsed by the government. However, accessibility and practical awareness of these concepts among stakeholders may still need improvement.

The EMIS is rated Established for the criterion "Concepts and Definitions." The system demonstrates strong documentation and alignment with national and international standards, endorsed by the government. However, gaps in accessibility and practical application at lower levels hinder its progression to the Advanced level. By focusing on accessibility, training, and

feedback mechanisms, the EMIS can enhance its service delivery and support more comprehensive engagement with stakeholders.

Table 1.1
Items and Responses for Concepts and Definitions

Item	Statement	Response	Level
		Yes/No	1/2/3
3_1A1a	Is there an official operations manual that defines and documents EMIS concepts (e.g., terminology of specific concepts that relate to the collection, management and dissemination of education data)?	0	3
3_1A1b	Is there an official operations manual that defines and documents data fields?	0	3
3_1A1c	Is there an official operations manual that defines and documents indicators?	0	3
3_1A1d	Is there an official operations manual that defines and documents metadata?	0	3
3_1A1e	Is there an official operations manual that defines and documents archival of data records?	0	3
3_1A1f	Is there an official operations manual that defines and documents service delivery indicators?	0	3
3_1A2	Are the concepts and definitions that govern the EMIS in accordance with other national datasets?	1	3
3_1A3	Are the concepts and definitions that govern the EMIS endorsed by the government?	0	3
3_1A4	Does documentation exist on national concepts and definitions that govern the EMIS?	1	3
3_1A5	Are the concepts and definitions that govern the EMIS easily accessible?	0	1
3_1A6	Do the overall structure, concepts and definitions for the EMIS follow regionally and internationally accepted standards, guidelines, and good practices?	1	3
3_1A7	Are data collectors and data engineers aware of differences in concepts and definitions used in the source data from those required of education statistics?	1	3

General Trends

The data reveals significant gaps in the documentation and accessibility of the Education Management Information System (EMIS). Most items highlight the absence of official manuals for key EMIS components, including concepts, data fields, indicators, metadata, archival processes, and service delivery indicators. While some alignment with national datasets is evident, there is limited accessibility of EMIS concepts and definitions, especially at the school level. Adherence to regional and international standards is noted in some areas, and data collectors and engineers demonstrate awareness of discrepancies between source and target data definitions. However, the lack of government endorsement and widespread documentation challenges the system's credibility and usability.

Item-by-Item Analysis

The responses to the items indicate critical deficiencies in EMIS documentation. Items 3_1A1a to 3_1A1f uniformly report the absence of official manuals at the ministry level, underscoring a systemic lack of documentation for concepts, data fields, indicators, metadata, archival processes,

and service delivery indicators. Item 3_1A2 highlights that EMIS concepts align with other national datasets, a positive aspect of the system. However, Item 3_1A3 reveals that these concepts lack formal government endorsement, which weakens institutional backing. Item 3_1A4 indicates that some documentation exists at the national level, but Item 3_1A5 reveals that this information is not easily accessible at the school level. Items 3_1A6 and 3_1A7 show partial adherence to international standards and awareness among data collectors and engineers about differences in data definitions, indicating some progress toward broader alignment.

Recommendations

To address the identified gaps, developing comprehensive operations manuals is a priority. These manuals should cover concepts, data fields, indicators, metadata, archival processes, and service delivery indicators, and they should be regularly updated and distributed across all levels of the education system. Accessibility must be enhanced by ensuring that school-level users have easy access to these materials through training and resource allocation. Government endorsement of EMIS concepts and definitions should be pursued to bolster credibility and ensure consistency in implementation. Efforts to strengthen adherence to regional and international standards should include capacity-building initiatives and partnerships with relevant organizations. Additionally, awareness programs for data collectors and engineers should be expanded to deepen their understanding of EMIS concepts and the differences between source and statistical data requirements.

Table 1.2
SWOT Analysis for Concepts and Definitions

Strength	Weakness
EMIS concepts align with national datasets. Adherence to regional and international standards is partially established.	Lack of official documentation for critical EMIS components. Poor accessibility of information at the school level.
Opportunities	Threats
Developing manuals and promoting standards provide a chance to enhance system reliability and utility.	Limited government endorsement and accessibility could undermine confidence and consistent implementation of the EMIS framework.

1.3.2 Classification

Standard: There are defined education system classifications based on technical guidelines and manuals.

Benchmark ⇒ Latent Emerging Established Advanced



Defined classifications are in place and aligned with international standards, such as UNESCO ISCED. However, their application may be centralized, with gaps in dissemination and understanding at lower levels. Limited capacity at Dzongkhag and school levels hinders consistent implementation.

The EMIS is rated Established for the criterion "Classification." While the system demonstrates strong adherence to international standards and technical guidelines at the ministry level, its reliance on centralized expertise and limited capacity at lower levels prevent it from achieving an Advanced rating. By enhancing accessibility, decentralizing training, and fostering stakeholder

engagement, the EMIS can ensure consistent application of classification systems across all levels, solidifying its alignment with global standards.

Table 1.3
Items and Responses for Classification

Item	Statement	Response	Level
		Yes/No	1/2/3
3_1B1	Are the documented education system classifications defined based on technical guidelines and manuals (UNESCO Institute for Statistics (UIS) technical guidelines and manuals and OECD Glossary of Statistical Terms)?	1	3
3_1B2	Is the classification of educational expenditure based on UIS technical guidelines and/or United Nations System of National Accounts (SNA)?	1	3
3_1B3a	Are classification systems in accordance with nationally and internationally accepted standards, guidelines or good practices such as National classification programs and applications in public and private institutions?	1	3
3_1B3b	Are classification systems in accordance with nationally and internationally accepted standards, guidelines or good practices such as UIS-ISCED mapping and reporting data according to recent ISCED codes?	1	3

General Trends

The responses indicate a strong adherence to technical guidelines and international standards in the classification systems of the education management system. All items reflect the presence of documentation and alignment with UNESCO Institute for Statistics (UIS) technical guidelines, the Organization for Economic Co-operation and Development (OECD) Glossary of Statistical Terms, and national classification programs. Additionally, the classification of educational expenditure adheres to internationally accepted frameworks such as UIS technical guidelines and the United Nations System of National Accounts (SNA). This alignment demonstrates a well-structured and standards-compliant approach at the ministry level, contributing to a robust and credible data system.

Item-by-Item Analysis

The analysis of individual items highlights that Item 3_1B1 confirms that education system classifications are defined based on UIS technical guidelines and OECD terms, ensuring compliance with global frameworks. Similarly, Item 3_1B2 establishes that educational expenditure classifications align with UIS technical guidelines and the United Nations SNA, reflecting robust financial data management. Items 3_1B3a and 3_1B3b indicate adherence to national and international classification standards, including National classification programs, UIS-ISCED mapping, and recent ISCED codes. These findings underscore the ministry's commitment to maintaining high standards in classification systems.

Recommendations

To build on the strengths identified, the ministry should ensure continuous updates and dissemination of technical guidelines and manuals to all relevant stakeholders, including schools and Dzongkhags, to foster system-wide consistency. Training programs should be implemented to familiarize staff at all levels with these standards, ensuring effective application. Additionally, the ministry should regularly review and validate the classification systems to maintain alignment with evolving international frameworks such as ISCED revisions. Collaboration with international organizations can further enhance the technical capacity and promote the integration of emerging best practices into the national education management system.

Table 1.4
SWOT Analysis for Classification

Strength	Weakness
The classification systems of the education management system are strongly aligned with international standards and technical guidelines, such as those provided by UNESCO Institute for Statistics (UIS), the OECD Glossary of Statistical Terms, and the United Nations System of National Accounts (SNA). This adherence ensures the credibility, consistency, and reliability of education data management at the ministry level. The system's compliance with UIS-ISCED mapping and the use of recent ISCED codes also enhance its global comparability and relevance.	Despite the strong adherence to standards at the ministry level, the reliance on centralized expertise and resources may create a gap in understanding and implementation at lower levels, such as schools and Dzongkhags. Limited accessibility to technical guidelines and manuals for these stakeholders can hinder consistent application of the classification systems. This lack of decentralized capacity may compromise the uniformity of data classification and reporting.
Opportunities	Threats
The robust adherence to international standards provides an opportunity for the education management system to strengthen global partnerships and improve its capacity through collaborations with international organizations. By leveraging these partnerships, the system can access emerging best practices, technical training, and resources to maintain and enhance its alignment with evolving frameworks. Furthermore, decentralized training programs and updates can ensure a broader dissemination of knowledge and application of standards.	Inconsistencies in the application of classification standards at the school or Dzongkhag levels due to limited capacity or insufficient dissemination of guidelines pose a significant threat. Over-reliance on ministry-level expertise could lead to bottlenecks, reducing the system's overall efficiency and credibility. If these issues are not addressed, they may result in data inaccuracies and weaken the system's ability to maintain alignment with international benchmarks.

1.3.3 Scope

Standard: The scope of education statistics is broader than and not limited to a small number of indicators (e.g., measurements of enrollment, class size, and completion).

Benchmark ⇒ Latent Emerging Established Advanced



The scope includes a limited number of indicators beyond the basics but lacks comprehensiveness. Coverage of institutions and programs is inconsistent across different levels, and key dimensions of educational quality are overlooked.

The EMIS is rated Emerging for the criterion "Scope." While foundational elements such as a longitudinal data system, metadata integration, and adherence to international standards demonstrate potential, the system currently lacks the breadth and consistency required to address all dimensions of education comprehensively. By expanding the range of indicators, ensuring consistent implementation, and increasing coverage of institutions and programs, the EMIS can advance to higher levels of maturity, enabling it to serve as a robust tool for education system planning and policy-making.

Table 1.5
Items and Responses for Scope

Item	Statement	Responses	Level
		Yes/No	1/2/3
3_1C1	Is the scope of education statistics limited to a small number of indicators such as enrollment, class size and completion?	1	3
3_1C2	Does a longitudinal data system exist?	1	3
3_1C3	If not, has the desire to create a longitudinal data system been articulated?	1	3
3_1C4	Is the scope of education statistics in accordance with international standards, guidelines and/or good practices?	1	3
3_1C5	Does the scope of the dataset assess data overlaps to avoid redundancies (e.g., its scope does not overlap with other datasets)?	1	3
3_1C6	Is metadata considered as part of the education statistics in the EMIS as evidenced by its inclusion in the data warehouse?	1	3
3_1C7	Are all relevant educational institutions and programs covered in the EMIS (e.g., formal and non-formal educational institutions)?	1	1
3_1C8	Are relevant geographical boundaries (e.g., cities, towns) used to classify geographic-specific data (e.g., schools, district offices)?	1	3

General Trends

The analysis reveals a well-structured and comprehensive approach to managing education statistics within the EMIS framework. The data highlights the existence of a longitudinal data system and a clear intent to expand its scope in alignment with international standards and best practices. The dataset is designed to minimize redundancies by assessing overlaps and incorporating metadata in its architecture, reflecting robust data management practices. However, while the system broadly covers relevant geographical and institutional dimensions, including formal and non-formal institutions is only confirmed at the school level, indicating potential decentralization in implementation.

Item-by-Item Analysis

Item 3_1C1 indicates that the scope of education statistics is limited to key indicators such as enrollment, class size, and completion, suggesting a targeted approach to data management. Item 3_1C2 confirms the presence of a longitudinal data system, which is critical for tracking trends and supporting evidence-based decision-making. Item 3_1C3 underscores the proactive intent to enhance this system further. Item 3_1C4 shows that the scope of statistics aligns with international standards and best practices, reflecting compliance with global benchmarks. Item 3_1C5 highlights that redundancies are mitigated through scope assessments, improving efficiency. Item 3_1C6 demonstrates metadata integration into the data warehouse, ensuring comprehensive documentation. Item 3_1C7 affirms the inclusion of all relevant educational institutions and programs but only at the school level, which may indicate a lack of broader institutional coverage. Finally, Item 3_1C8 confirms that relevant geographical boundaries are used to classify geographic-specific data, supporting nuanced analysis and planning.

Recommendations

To enhance the EMIS framework, it is recommended to expand the scope of education statistics beyond the current indicators to include more dimensions, such as student performance and teacher effectiveness, for holistic monitoring. Efforts should be made to ensure the inclusion of all relevant educational institutions and programs at all levels, not just schools. Training and capacity-building initiatives should target stakeholders to ensure uniform implementation of guidelines. The

longitudinal data system should be continuously updated and integrated with other datasets to provide a comprehensive view of the education system. Lastly, metadata management should be prioritized across all levels to ensure consistency and accessibility in data reporting.

Table 1.6
SWOT Analysis for Scope

Strength	Weakness
The presence of a longitudinal data system and adherence to international standards indicate a strong foundation for data-driven decision-making. The integration of metadata and efforts to minimize redundancies enhance data quality and reliability. The system's geographical classification supports localized analysis and planning.	The scope of education statistics remains limited to a narrow set of indicators, potentially missing critical dimensions of educational quality. Coverage of relevant institutions and programs is confirmed only at the school level, indicating inconsistent implementation across levels.
Opportunities	Threats
Expanding the scope of statistics to include more comprehensive indicators and increasing the coverage of educational institutions and programs present significant opportunities. Strengthening the longitudinal data system and leveraging international partnerships can further enhance the system's effectiveness.	Inconsistent implementation across levels may create gaps in data coverage and reliability. Failure to expand the scope of education statistics and institutional coverage may limit the EMIS's ability to provide a holistic view of the education system and undermine its utility for policy-making.

1.3.4 Basis for Recording

Standard: Data recording systems follow internationally accepted standards, guidelines, and good practices.

Benchmark ⇒ Latent Emerging Established Advanced

√

Data recording systems generally adhere to internationally accepted standards and guidelines. Standardized reference periods and accurate data (e.g., expenditures) are recorded, but there are gaps in implementation at lower administrative levels.

The EMIS is rated Established for the criterion "Basis for Recording." While it demonstrates strong alignment with international standards and reliability at the ministry level, inconsistencies in application at lower administrative levels and a limited scope of recorded metrics prevent it from achieving Advanced status. By addressing these gaps through capacity building, expanding data scope, and ensuring regular updates to align with evolving standards, the EMIS can fully realize its potential as a robust and comprehensive data recording system.

Table 1.7
Items and Responses for Basis for Recording

Item	Statement	Responses	Level
		Yes/No	1/2/3
3_ID1	Does the data recording system follow internationally accepted standards, guidelines, or good practices?	1	3
3_ID2	Are students' age recorded according to a specific reference period/date?	1	3
3_ID3	Are graduates' data attributed to the academic year in which the graduates are enrolled?	1	3
3_ID4	Does expenditure data (i.e. public expenditure on education as a percentage of GDP) refer to actual expenditure (not estimated or projected)?	1	3

General Trends

The data indicates high compliance with internationally accepted standards and practices within the education management system. The recording system adheres to global guidelines, ensuring consistency and reliability. Key data points, such as students' ages and graduates' data, are recorded using specific reference periods, and expenditure data are based on actual figures rather than estimates. This adherence demonstrates a robust and transparent data recording system, primarily managed at the ministry level.

Item-by-Item Analysis

Item 3_1D1 confirms that the data recording system follows internationally accepted standards, guidelines, and good practices, ensuring alignment with global norms. Item 3_1D2 indicates that students' ages are recorded according to a specific reference date, which promotes consistency and accuracy in demographic data. Item 3_1D3 reveals that graduates' data is appropriately attributed to the academic year of their enrollment, supporting precise longitudinal analysis. Lastly, Item 3_1D4 highlights that expenditure data is based on actual public expenditure figures rather than projections, ensuring the reliability of financial reporting.

Recommendations

Regular reviews and updates to the recording system should be conducted to align with evolving international standards and guidelines to sustain and enhance the quality of data recording practices. Training programs should be implemented at all administrative levels to ensure uniform understanding and application of these practices. Expanding the scope of recorded data to include additional metrics, such as teacher qualifications or school infrastructure, would provide a more comprehensive dataset for policy-making. Additionally, increasing transparency by publicly sharing the processes and standards used in data recording could further strengthen trust and credibility.

Table 1.8

SWOT Analysis for Basis for Recording

Strength	Weakness
The data recording system's alignment with international standards ensures high-quality, reliable data. The use of specific reference periods for student age and graduates' data promotes consistency. Recording expenditure data based on actual figures enhances transparency and accuracy.	The reliance on the ministry level for these practices may limit the direct involvement of lower levels, such as schools and Dzongkhags, in ensuring consistent data recording.
Opportunities	Threats
There is an opportunity to expand the dataset to include more comprehensive metrics, such as school infrastructure and teacher qualifications. Providing training and capacity-building programs for schools and Dzongkhags can ensure system-wide consistency in data recording.	Inconsistent application of these practices at lower administrative levels could undermine the overall reliability and utility of the data system. Failure to adapt to evolving international standards may risk diminishing the system's credibility and relevance.

1.4 Accuracy and Reliability

General Standard: Source data and statistical techniques are sound and reliable, and statistical outputs sufficiently portray reality.

1.4.1 Source Data

Standard: Available source data provide an adequate basis for compiling statistics.



Some source data is available and provides a partial basis for compiling statistics. However, gaps in reporting consistency, engagement, and compatibility with standards reduce its reliability. The EMIS system is rated Emerging for "Source Data." While strong school-level engagement and partial alignment with international standards demonstrate progress, inconsistencies across levels, resource constraints, and usability challenges hinder full system reliability. Addressing these weaknesses through standardization, capacity building, and technological improvements will enable the system to progress to an Established level.

3-2A1a. Do administrative school censuses (or the aggregate from local government) collect information on the structure of the education system?

Table 1.9
3 2A1a L * 3 2A1a * ID Crosstabulation

Count					
ID		3 2A1a			Total
		0	1		
2	3 2A1a_L	3		1	1
	Total			1	1
3	3_2A1a_L	1	2	2	4
		2	4	7	11
		3	2	1	3
		9	2	0	2
	Total		10	10	20
4	3_2A1a_L	1	71	85	156
		2	12	18	30
		3	14	12	26
		9	9	1	10
	Total		106	116	222
Total	3_2A1a_L	1	73	87	160
		2	16	25	41
		3	16	14	30
		9	11	1	12
	Total		116	127	243

General Trends: Patterns in Yes/No Responses

The analysis of the responses indicates a nearly balanced distribution between "Yes" and "No" responses, with 127 "Yes" and 116 "No." A significant majority of the "Yes" responses are

concentrated at level L=1 (schools), contributing 87 out of 127 affirmative responses. This suggests that schools are the primary contributors to structural data collection activities. Responses from higher administrative levels, such as L=2 (Dzongkhag) and L=3 (Ministry), are less frequent, with 41 and 30 responses, respectively. Minimal activity was observed at L=9, and only 12 responses were reported. This trend underlines the dominant role of schools in the current data collection structure.

Item-by-Item Analysis

When examining the responses by level of operation, the "No" responses are primarily associated with L=1, with 73 out of 116 responses indicating a lack of data collection mechanisms at the school level. Similarly, L=2 and L=3 reported 16 "No" responses each. For "Yes" responses, L=1 again dominates with 87 out of 127 affirmative responses, indicating that schools are relatively well-positioned to collect structural data. L=2 and L=3 also contribute positively, with 25 and 14 "Yes" responses, respectively. Minimal engagement at L=9 requires further investigation to ensure consistent reporting. The data indicates that most responses are tied to a single level of operation, although minor inconsistencies, such as responses from L=9, suggest the need for improved classification.

Key Contradictions

A notable contradiction emerges when "No" responses are recorded alongside an operational level (e.g., L=1, L=2, or L=3). This inconsistency indicates a potential misalignment between reported data collection mechanisms and actual practices. For instance, a "No" response from L=1 suggests that structural data collection is not occurring at the school level despite schools being active contributors. Such discrepancies highlight the need for clearer definitions and guidelines for identifying operational levels and their roles in data collection.

Recommendations

To address these issues, targeted training should be provided to respondents across all levels to ensure consistent and accurate reporting of data collection activities. Strengthening institutional data collection and consolidation mechanisms at all levels, particularly between L=1 and higher administrative units, will help minimize gaps. Additionally, fostering better coordination between GovTech and PPD will ensure that guidelines for identifying and reporting levels of operation are uniformly applied. These steps will enhance the reliability of structural data collection processes and improve institutionalization.

3-2A1b. Do administrative school censuses (or the aggregate from local government) collect information on Students?

Table 1.10

3 2A1b L * 3 2A1b * ID Crosstabulation

Count					
ID		3 2A1b			Total
		0	1		
2	3 2A1b_L	3		1	1
	Total			1	1
3	3_2A1b_L	1	2	5	7
		2	0	8	8
		3	1	2	3

		9	2	0	2
	Total		5	15	20
4	3_2A1b_L	1	49	121	170
		2	8	15	23
		3	11	13	24
		9	4	1	5
	Total		72	150	222
Total	3_2A1b_L	1	51	126	177
		2	8	23	31
		3	12	16	28
		9	6	1	7
	Total		77	166	243

General Trends: Patterns in Yes/No Responses

The analysis shows that most responses to the main question are "Yes" (166 out of 243), indicating that administrative school censuses or local government aggregates generally collect student information. Among these, the majority (126 out of 166) are reported at the school level (L=1). Responses from L=2 (Dzongkhag) and L=3 (Ministry) are fewer, with 23 and 16 "Yes" responses, respectively. L=9, representing unclassified or minimal involvement, accounts for only seven responses, predominantly "No" (6 out of 7). These trends highlight the central role of schools in reporting student data compared to higher administrative levels.

Item-by-Item Analysis

For "No" responses, L=1 dominates with 51 out of 77 responses, suggesting gaps in student data collection at the school level. Similarly, L=3 and L=9 contribute 12 and 6 "No" responses, respectively, while L=2 records the fewest "No" responses at 8. Conversely, "Yes" responses are strongest at L=1 (126), reflecting active student data collection by schools. L=2 and L=3 show moderate levels of affirmative responses, with 23 and 16, respectively. However, L=9 contributes only one "Yes" response, underscoring its minimal role. Responses are generally aligned with a single level of operation, though occasional discrepancies (e.g., L=9 responses) warrant closer review.

Key Contradictions

Key contradictions arise when "No" responses are paired with operational activity at a given level, such as L=1. For instance, a "No" response suggests an absence of student data collection, yet the level of operation indicates involvement, implying inconsistencies in reporting or classification. Similarly, the small but notable number of "Yes" responses at L=9 suggests potential misclassification or erroneous reporting of operational levels. These contradictions require clarification to ensure data accuracy and consistency across levels.

Recommendations

To address gaps and contradictions, focused training should be provided to respondents to improve their understanding of the data collection process and accurate identification of operational levels. Streamlining communication between GovTech and PPD can help establish clearer reporting guidelines, particularly for schools (L=1) and higher administrative levels. Furthermore, integrating cross-level verification mechanisms will help minimize errors and ensure uniformity in data reporting. Enhanced collaboration between schools and administrative units can improve institutionalization and reliability of student data collection processes.

3-2A1c. Do administrative school censuses (or the aggregate from local government) collect information on teachers?

Table 1.11
3 2A1c L * 3 2A1c * ID Crosstabulation

Count					
ID		3 2A1c			Total
		0	1		
2	3 2A1c_L	3		1	1
	Total			1	1
3	3_2A1c_L	1	2	4	6
		2	0	9	9
		3	1	2	3
		9	2	0	2
	Total		5	15	20
4	3_2A1c_L	1	66	98	164
		2	14	14	28
		3	10	14	24
		9	4	2	6
	Total		94	128	222
Total	3_2A1c_L	1	68	102	170
		2	14	23	37
		3	11	17	28
		9	6	2	8
	Total		99	144	243

General Trends: Patterns in Yes/No Responses

The majority of responses to the main question are "Yes" (144 out of 243), suggesting that administrative school censuses or local government aggregates effectively collect teacher-related information. Level L=1 (schools) accounts for the largest share of "Yes" responses (102 out of 144), indicating schools' significant role in reporting teacher data. Moderate participation is seen at L=2 (Dzongkhag) with 23 "Yes" responses and at L=3 (Ministry) with 17 "Yes" responses. "No" responses are fewer but primarily concentrated at L=1 (68 out of 99), pointing to potential gaps or inconsistencies in teacher data collection at the school level.

Item-by-Item Analysis

Among "No" responses, L=1 reports the highest number (68 out of 99), indicating that schools face challenges or inconsistencies in collecting teacher data. L=2 and L=3 contribute 14 and 11 "No" responses, respectively, while L=9 records minimal engagement with six "No" responses. Conversely, "Yes" responses are strongly concentrated at L=1, with 102 out of 144 responses affirming active teacher data collection by schools. L=2 and L=3 also demonstrate notable involvement with 23 and 17 "Yes" responses, respectively. The alignment of responses with a single level of operation is generally consistent, but occasional discrepancies, particularly at L=9, require further examination.

Key Contradictions

Key contradictions arise when "No" responses are recorded at operational levels, especially at L=1, where teacher data collection is expected. This inconsistency suggests either gaps in reporting

processes or misalignment between actual practices and reported activities. Similar issues are observed with minimal "Yes" responses at L=9, indicating potential misclassification or erroneous data entry. These contradictions highlight the need for improved clarity and validation in the reporting process to ensure accuracy.

Recommendations

To address these gaps, targeted training and capacity-building initiatives should be implemented, focusing on schools (L=1) to improve their data collection capabilities. Establishing clear guidelines for identifying and reporting operational levels will reduce inconsistencies and enhance data quality. Collaboration between GovTech and PPD should be strengthened to ensure alignment and standardization across all levels. Introducing cross-level data verification mechanisms will help identify and resolve contradictions, ensuring the accuracy and reliability of teacher-related data.

3-2A1d. Do administrative school censuses (or the aggregate from local government) collect information on principals/school management?

Table 1.12
3 2A1d L * 3 2A1d * ID Crosstabulation

Count					
ID		3 2A1d			Total
		0	1		
2	3 2A1d L	1		1	1
	Total			1	1
3	3_2A1d_L	1	2	3	5
		2	1	10	11
		3	0	2	2
		9	2	0	2
	Total		5	15	20
4	3_2A1d_L	1	58	101	159
		2	10	20	30
		3	12	14	26
		9	5	2	7
	Total		85	137	222
Total	3_2A1d_L	1	60	105	165
		2	11	30	41
		3	12	16	28
		9	7	2	9
	Total		90	153	243

General Trends: Patterns in Yes/No Responses

The majority of responses to the main question are "Yes" (153 out of 243), indicating that administrative school censuses or local government aggregates generally collect information on principals or school management. Level L=1 (schools) accounts for the majority of "Yes" responses (105 out of 153), highlighting the critical role of schools in reporting management-related data. L=2 (Dzongkhag) and L=3 (Ministry) show moderate engagement with 30 and 16 "Yes" responses, respectively. "No" responses are concentrated at L=1 (60 out of 90), indicating that while schools are the primary contributors, gaps in management data collection persist.

Item-by-Item Analysis

For "No" responses, L=1 reports the highest number (60 out of 90), suggesting challenges or inconsistencies in collecting management data at the school level. L=2 and L=3 contribute 11 and 12 "No" responses, respectively, while L=9 records minimal engagement with seven "No" responses. Conversely, "Yes" responses are dominated by L=1, with 105 out of 153 responses affirming active data collection on school management. L=2 and L=3 follow, with 30 and 16 "Yes" responses, respectively, demonstrating notable, though less extensive, engagement. Responses generally align with a single level of operation, but discrepancies at L=9 highlight the need for more consistent reporting.

Key Contradictions

Key contradictions arise when "No" responses are paired with operational activity at a specific level, particularly at L=1. This discrepancy suggests that while schools are expected to report management data, inconsistencies in data collection or reporting processes may exist. Additionally, the low number of "Yes" responses at L=9 raises questions about potential misclassification or errors in identifying operational levels. These contradictions highlight the need for clearer definitions and validation mechanisms in the reporting process.

Recommendations

To address these challenges, targeted training should be provided to schools (L=1) to strengthen their data collection practices and ensure consistent reporting. Collaboration between GovTech and PPD should be enhanced to establish clear guidelines and improve alignment across all levels. Introducing data verification mechanisms and conducting regular audits will help resolve discrepancies and ensure accuracy in management data reporting. Finally, capacity-building initiatives for L=2 and L=3 will help scale best practices across levels and improve the institutionalization of data collection processes.

3-2A1e. Do administrative school censuses (or the aggregate from local government) collect information on educational expenditure?

Table 1.13

3_2A1e_L * 3_2A1e * ID Crosstabulation

Count					
ID			3_2A1e		Total
			0	1	
2	3_2A1e_L	1		1	1
	Total			1	1
3	3_2A1e_L	1	4	2	6
		2	2	6	8
		3	3	1	4
		9	2	0	2
	Total		11	9	20
4	3_2A1e_L	1	117	38	155
		2	13	12	25
		3	18	6	24
		9	17	1	18

	Total		165	57	222
Total	3_2A1e_L	1	121	41	162
		2	15	18	33
		3	21	7	28
		9	19	1	20
	Total		176	67	243

General Trends: Patterns in Yes/No Responses

The majority of responses to the main question are "No" (176 out of 243), indicating that administrative school censuses or local government aggregates often do not collect information on educational expenditure. The majority of "No" responses are concentrated at L=1 (121 out of 176), reflecting potential gaps in data collection at the school level. "Yes" responses are relatively few (67 out of 243), with L=1 still accounting for the largest share of affirmative responses (41), followed by L=2 (18) and L=3 (7). These trends suggest that educational expenditure data collection is limited and inconsistent across all levels of operation.

Item-by-Item Analysis

Among "No" responses, L=1 has the highest number (121), indicating significant challenges in collecting educational expenditure data at the school level. L=2 and L=3 contribute 15 and 21 "No" responses, respectively, while L=9 reports 19 "No" responses, highlighting minimal involvement or possible misclassification. For "Yes" responses, L=1 leads with 41, followed by L=2 with 18, and L=3 with only 7. The alignment of responses with a single level of operation is generally consistent, but discrepancies at L=9, where there is minimal "Yes" reporting, suggest the need for improved classification and verification.

Key Contradictions

A significant contradiction arises when "No" responses are paired with operational activity, particularly at L=1, where schools are expected to manage and report expenditure data. The low number of "Yes" responses at L=9 also raises questions about the accuracy of classification or the adequacy of the data collection framework. These inconsistencies underscore a lack of clarity in the process or gaps in reporting mechanisms across various levels of operation.

Recommendations

To address these gaps, targeted training should be provided to schools (L=1) and higher administrative levels to strengthen their capacity for collecting and reporting educational expenditure data. Clear guidelines for identifying and classifying levels of operation should be established and communicated effectively. Enhanced collaboration between GovTech and PPD will facilitate standardization and improve alignment across all levels. Routine data audits and cross-level verification mechanisms should be introduced to identify and resolve contradictions, ensuring reliable and accurate reporting of educational expenditure.

3_2A2. Does the design of data collection instruments allow for easy completion and provide a template that is appropriate for computer processing?

Table 1.14

3_2A2_L * 3_2A2 * ID Crosstabulation

Count					
ID			3_2A2		Total
			0	1	
2	3_2A2_L	1		1	1
	Total			1	1
3	3_2A2_L	1	6	3	9
		2	4	2	6
		3	1	1	2
		9	3	0	3
	Total		14	6	20
4	3_2A2_L	1	76	94	170
		2	6	5	11
		3	19	15	34
		9	7	0	7
	Total		108	114	222
Total	3_2A2_L	1	82	98	180
		2	10	7	17
		3	20	16	36
		9	10	0	10
	Total		122	121	243

General Trends: Patterns in Yes/No Responses

The responses to the main question show a nearly balanced split, with 122 "No" responses and 121 "Yes" responses, indicating mixed perceptions of whether the design of data collection instruments is user-friendly and suitable for computer processing. Level L=1 (schools) accounts for the majority of both "No" (82) and "Yes" (98) responses, highlighting schools as the primary respondents. L=2 (Dzongkhag) and L=3 (Ministry) report fewer responses, with L=2 contributing 10 "No" and 7 "Yes" responses and L=3 contributing 20 "No" and 16 "Yes" responses. L=9 consistently shows minimal engagement, with 10 "No" responses and no "Yes" responses.

Item-by-Item Analysis

Among the "No" responses, L=1 has the highest count (82), suggesting significant challenges with the usability and computer compatibility of data collection instruments at the school level. L=2 and L=3 contribute 10 and 20 "No" responses, respectively, reflecting similar issues at higher administrative levels. For "Yes" responses, L=1 again leads with 98, indicating that a considerable portion of schools finds the instruments appropriate. L=2 and L=3 show lower but noteworthy engagement with 7 and 16 "Yes" responses, respectively. Responses are generally aligned with a single operational level, though discrepancies at L=9, where only "No" responses are reported, require further investigation.

Key Contradictions

Contradictions emerge when "No" responses are associated with active operational levels, particularly at L=1, where schools are expected to play a critical role in completing and processing data collection instruments. Additionally, the complete absence of "Yes" responses at L=9 suggests potential misclassification or systemic issues in capturing responses at this level. These inconsistencies highlight gaps in the design and implementation of data collection instruments and the need for clearer reporting guidelines.

Recommendations

To address the observed gaps, it is essential to revise the design of data collection instruments to ensure they are user-friendly and compatible with computer processing. Training sessions should be conducted for respondents, especially at L=1, to improve familiarity with the instruments and address usability concerns. Collaboration between GovTech and PPD should focus on standardizing instruments across levels and validating operational classifications. Regular audits and feedback mechanisms should be introduced to identify and rectify inconsistencies, ensuring alignment with the needs of respondents at all levels.

3_2A3. Is there a registry of all schools, and is it used to identify schools that respond and do not respond to the EMIS for data reporting?

Table 1.15

3_2A3_L * 3_2A3 * ID Crosstabulation

Count					
ID		3_2A3			Total
		0	1		
2	3_2A3_L	1		1	1
	Total			1	1
3	3_2A3_L	1	1	4	5
		2	2	3	5
		3	3	5	8
		9	2	0	2
	Total	8	12	20	
4	3_2A3_L	1	56	78	134
		2	2	5	7
		3	17	56	73
		9	6	2	8
	Total	81	141	222	
Total	3_2A3_L	1	57	83	140
		2	4	8	12
		3	20	61	81
		9	8	2	10
	Total	89	154	243	

General Trends: Patterns in Yes/No Responses

The majority of responses to the main question are "Yes" (154 out of 243), indicating that most participants affirm the existence of a school registry used to identify EMIS respondents and non-respondents. Level L=1 (schools) accounts for the largest share of "Yes" responses (83 out of 154), suggesting that schools are key stakeholders in maintaining and utilizing the registry. L=3 (Ministry) follows with 61 "Yes" responses, reflecting substantial involvement at the ministry

level. Conversely, "No" responses (89 out of 243) are concentrated at L=1 (57 out of 89), pointing to challenges or gaps at the school level. L=2 (Dzongkhag) and L=9 exhibit minimal engagement in both "Yes" and "No" responses.

Item-by-Item Analysis

Among "No" responses, L=1 has the highest count (57), highlighting potential issues with registry use at the school level. L=2 contributes four "No" responses, and L=3 records 20, indicating that challenges also exist at higher administrative levels. For "Yes" responses, L=1 dominates with 83 affirmations, followed by L=3 with 61, demonstrating robust involvement at these levels. L=2 has a smaller yet notable contribution of 8 "Yes" responses. Discrepancies at L=9, where only two "Yes" responses are recorded compared to eight "No" responses, suggest inconsistencies in reporting or classification.

Key Contradictions

Key contradictions arise when "No" responses are paired with operational activity, particularly at L=1, where schools are expected to play a crucial role in maintaining and utilizing the registry. The relatively low engagement at L=2 and the mixed responses at L=9 further highlight inconsistencies that could undermine the reliability of the registry. These discrepancies suggest the need for clearer operational guidelines and validation mechanisms to ensure accurate reporting.

Recommendations

To address these challenges, targeted interventions should focus on improving schools' (L=1) understanding and utilization of the registry. Regular training and capacity-building sessions can ensure consistent and effective registry use across all levels. Collaboration between GovTech and PPD should aim to establish standardized protocols for registry management and reporting. Cross-level validation mechanisms and routine audits should be implemented to identify and resolve inconsistencies, particularly at L=2 and L=9, ensuring the registry's reliability for data reporting.

3_2A4. Does the registry cover all schools (e.g., public and private)?

Table 1.16

3_2A4_L * 3_2A4 * ID Crosstabulation

Count					
ID			3_2A4		Total
			0	1	
2	3_2A4_L	1		1	1
	Total			1	1
3	3_2A4_L	1	0	4	4
		2	1	4	5
		3	1	8	9
		9	2	0	2
	Total		4	16	20
4	3_2A4_L	1	47	89	136
		2	1	5	6
		3	14	61	75
		9	4	1	5

	Total		66	156	222
Total	3_2A4_L	1	47	94	141
		2	2	9	11
		3	15	69	84
		9	6	1	7
	Total		70	173	243

General Trends: Patterns in Yes/No Responses

The majority of responses to the main question are "Yes" (173 out of 243), indicating that the registry is perceived to cover all schools, including public and private. Level L=1 (schools) contributes the highest number of "Yes" responses (94 out of 173), followed by L=3 (Ministry) with 69 "Yes" responses, showing active involvement at these levels. Conversely, "No" responses are fewer (70 out of 243), with L=1 accounting for the majority (47 out of 70). Minimal engagement is observed at L=2 and L=9, with fewer responses recorded at these levels.

Item-by-Item Analysis

For "No" responses, L=1 reports the highest count (47), indicating challenges in registry coverage or reporting at the school level. L=2 and L=3 contribute two and 15 "No" responses, respectively, reflecting gaps at higher administrative levels as well. "Yes" responses are dominated by L=1 (94), indicating that many schools recognize the registry as comprehensive. L=3 also shows strong support with 69 "Yes" responses, while L=2 contributes only nine. Discrepancies at L=9, where only one "Yes" response and six "No" responses are recorded, highlight potential issues with classification or engagement at this level.

Key Contradictions

A key contradiction emerges when "No" responses are recorded at operational levels, particularly at L=1, where schools should have a clear understanding of the registry's coverage. Similarly, the minimal engagement and mixed responses at L=9 suggest potential misclassification or gaps in awareness of the registry's comprehensiveness. These inconsistencies point to the need for clearer guidelines and validation processes to ensure accurate and reliable reporting.

Recommendations

To address these gaps, efforts should focus on improving schools' (L=1) understanding of the registry's scope and ensuring its accurate reporting. Standardized protocols should be established for all levels, supported by training and capacity-building sessions. Collaboration between GovTech and PPD should aim to strengthen registry management and coverage, with regular audits to verify completeness. Cross-level validation mechanisms should also be implemented to identify and rectify contradictions, particularly at L=3 and L=9.

3_2A5. Are source data obtained from comprehensive data collection programs that take into account country-specific conditions (e.g., limited technological means for data collection, difficulties in obtaining data from remote areas)?

Table 1.17
3_2A5 L * 3_2A5 * ID Crosstabulation

Count		
ID	3_2A5	Total

			0	1	
2	3_2A5_L	1		1	1
	Total			1	1
3	3_2A5_L	1	1	6	7
		2	0	4	4
		3	4	3	7
		9	2	0	2
	Total		7	13	20
4	3_2A5_L	1	68	84	152
		2	4	6	10
		3	29	21	50
		9	10	0	10
	Total		111	111	222
Total	3_2A5_L	1	69	91	160
		2	4	10	14
		3	33	24	57
		9	12	0	12
	Total		118	125	243

General Trends: Patterns in Yes/No Responses

The responses to the main question are relatively balanced, with 125 "Yes" and 118 "No" responses, indicating mixed perceptions about the comprehensiveness of data collection programs in addressing country-specific conditions. Level L=1 (schools) contributes the highest number of responses, with 91 "Yes" and 69 "No," demonstrating their prominent role in data collection. L=3 (Ministry) follows with 24 "Yes" and 33 "No" responses, while L=2 (Dzongkhag) shows limited engagement with only 10 "Yes" and 4 "No" responses. L=9 records no "Yes" responses and 12 "No," highlighting minimal involvement at this level.

Item-by-Item Analysis

Among "No" responses, L=1 leads with 69, reflecting potential gaps in addressing country-specific challenges in data collection at the school level. L=3 and L=9 also show notable "No" responses, with 33 and 12, respectively, suggesting issues at higher administrative levels and unclassified operations. Conversely, "Yes" responses are highest at L=1 (91), indicating that many schools recognize efforts to consider country-specific conditions. L=3 shows moderate support with 24 "Yes" responses, and L=2 has limited engagement with 10 "Yes" responses. Discrepancies at L=9, where no "Yes" responses are recorded, point to potential misclassification or gaps in program implementation.

Key Contradictions

Contradictions are evident where "No" responses are paired with operational activity, especially at L=1, which is expected to play a central role in data collection. Additionally, the absence of "Yes" responses at L=9, coupled with a significant number of "No" responses, suggests possible misclassification or lack of awareness of country-specific adaptations. These inconsistencies highlight the need for better alignment between data collection practices and operational realities.

Recommendations

To address these gaps, data collection programs should be revised to better align with country-specific conditions, focusing on schools (L=1) and higher administrative levels (L=3). Targeted training and capacity-building initiatives can enhance understanding and application of these

adaptations. Collaboration between GovTech and PPD should prioritize standardizing data collection processes and integrating mechanisms to account for technological limitations and remote area challenges. Routine validation and feedback loops should be established to address contradictions and ensure consistent program implementation across all levels.

3_2A6. Do statistics describe the structural and normative characteristics of the education system and are they aligned with the most recent ISCED standards to the extent possible?

Table 1.18

3_2A6_L * 3_2A6 * ID Crosstabulation

Count					
ID			3_2A6		Total
			0	1	
2	3_2A6_L	3		1	1
	Total			1	1
3	3_2A6_L	1	0	4	4
		2	3	1	4
		3	6	4	10
		9	2	0	2
	Total		11	9	20
4	3_2A6_L	1	78	55	133
		2	5	8	13
		3	36	26	62
		9	13	1	14
	Total		132	90	222
Total	3_2A6_L	1	78	59	137
		2	8	9	17
		3	42	31	73
		9	15	1	16
	Total		143	100	243

General Trends: Patterns in Yes/No Responses

The majority of responses to the main question are "No" (143 out of 243), suggesting that statistics often fail to adequately describe the structural and normative characteristics of the education system or align with ISCED standards. Level L=1 (schools) accounts for the highest number of "No" responses (78), followed by L=3 (Ministry) with 42. "Yes" responses are fewer (100 out of 243), with L=1 contributing 59 and L=3 contributing 31, indicating some recognition of efforts to meet ISCED standards. Minimal engagement is observed at L=2 (Dzongkhag) and L=9, with relatively small numbers of responses recorded at these levels.

Item-by-Item Analysis

For "No" responses, L=1 leads with 78, highlighting significant challenges at the school level in aligning statistics with ISCED standards. L=3 contributes 42 "No" responses, reflecting gaps at the ministry level. Conversely, "Yes" responses are concentrated at L=1 (59), suggesting that some schools perceive progress in addressing ISCED standards. L=3 also shows moderate engagement with 31 "Yes" responses, while L=2 reports minimal activity with 9 "Yes" responses. Discrepancies at L=9, where only one "Yes" response and 15 "No" responses are recorded, indicate potential issues with classification or engagement at this level.

Key Contradictions

A key contradiction arises where "No" responses are paired with operational activity, particularly at L=1 and L=3, where alignment with ISCED standards should be emphasized. The minimal number of "Yes" responses at L=9, coupled with a high number of "No" responses, highlights inconsistencies in reporting or lack of clarity about ISCED alignment. These contradictions underscore the need for clearer guidelines and enhanced support to improve compliance with ISCED standards.

Recommendations

To address these gaps, schools (L=1) and the ministry (L=3) should receive targeted support and training to enhance their understanding and implementation of ISCED standards. Collaboration between GovTech and PPD should focus on aligning statistical frameworks with ISCED requirements and developing standardized protocols for data reporting. Regular audits and feedback mechanisms should be implemented to identify and address inconsistencies, particularly at L=9. Additionally, efforts to strengthen cross-level collaboration will improve the overall quality and alignment of educational statistics.

3_2A7. Is data produced from the EMIS compatible with official nationally and internationally reported data?

Table 1.19

3_2A7_L * 3_2A7 * ID Crosstabulation

Count					
ID		3_2A7			Total
		0	1		
2	3_2A7_L	3		1	1
	Total			1	1
3	3_2A7_L	1	0	3	3
		2	2	3	5
		3	7	3	10
		9	2	0	2
	Total		11	9	20
4	3_2A7_L	1	43	98	141
		2	1	3	4
		3	26	45	71
		9	5	1	6
	Total		75	147	222
Total	3_2A7_L	1	43	101	144
		2	3	6	9
		3	33	49	82
		9	7	1	8
	Total		86	157	243

General Trends: Patterns in Yes/No Responses

The majority of responses to the main question are "Yes" (157 out of 243), indicating that data from the EMIS is perceived as compatible with national and international datasets. Level L=1 (schools) contributes the largest share of "Yes" responses (101 out of 157), demonstrating schools' pivotal role in producing compatible data. L=3 (Ministry) follows with 49 "Yes" responses, while

L=2 (Dzongkhag) and L=9 exhibit minimal engagement. "No" responses (86 out of 243) are primarily concentrated at L=1 (43), reflecting challenges in data compatibility at the school level.

Item-by-Item Analysis

Among "No" responses, L=1 leads with 43, indicating that many schools face difficulties in aligning EMIS data with official datasets. L=3 contributes 33 "No" responses, pointing to gaps at the ministry level as well. "Yes" responses dominate at L=1 (101), highlighting that a majority of schools acknowledge compatibility with national and international data. L=3 also shows significant support with 49 "Yes" responses, while L=2 has limited activity with 6 "Yes" and 3 "No" responses. L=9 displays minimal engagement, with only one "Yes" and seven "No" responses, suggesting possible misclassification or lack of involvement.

Key Contradictions

A key contradiction arises where "No" responses are paired with operational activity, especially at L=1 and L=3, where compatibility with official datasets should be emphasized. The minimal number of "Yes" responses at L=9, coupled with a higher number of "No" responses, suggests inconsistencies in reporting or lack of clarity about EMIS compatibility. These contradictions highlight the need for clearer standards and enhanced support to improve data alignment.

Recommendations

Efforts should focus on improving the compatibility of EMIS data with national and international standards, particularly at L=1 and L=3. Training programs and capacity-building initiatives can enhance schools' and the ministry's understanding of compatibility requirements. Collaboration between GovTech and PPD should prioritize aligning EMIS frameworks with official reporting standards and developing robust validation protocols. Regular audits and feedback mechanisms can help identify and address inconsistencies, ensuring reliable and compatible data across all operational levels.

3_2A8. Does the data collection system provide for the timely receipt of source data?

Table 1.20

3_2A8_L * 3_2A8 * ID Crosstabulation

Count					
ID		3_2A8			Total
		0	1		
2	3_2A8_L	3		1	1
	Total			1	1
3	3_2A8_L	1	0	7	7
		2	2	3	5
		3	4	2	6
		9	2	0	2
	Total		8	12	20
4	3_2A8_L	1	32	121	153
		2	3	7	10
		3	22	31	53
		9	4	2	6
	Total		61	161	222
Total	3_2A8_L	1	32	128	160
		2	5	10	15

		3	26	34	60
		9	6	2	8
	Total		69	174	243

General Trends: Patterns in Yes/No Responses

The majority of responses to the main question are "Yes" (174 out of 243), indicating that the data collection system is generally perceived to ensure the timely receipt of source data. Level L=1 (schools) contributes the largest share of "Yes" responses (128 out of 174), emphasizing schools' significant role in the system's functionality. L=3 (Ministry) follows with 34 "Yes" responses, while L=2 (Dzongkhag) and L=9 exhibit limited engagement, with 10 and 2 "Yes" responses, respectively. "No" responses (69 out of 243) are predominantly concentrated at L=1 (32), suggesting areas where timeliness could be improved.

Item-by-Item Analysis

Among "No" responses, L=1 leads with 32, highlighting challenges at the school level in ensuring timely data submission. L=3 contributes 26 "No" responses, reflecting similar gaps at the ministry level. Conversely, "Yes" responses dominate at L=1 (128), indicating that most schools perceive the system as effective in ensuring timely data receipt. L=3 shows moderate support with 34 "Yes" responses, while L=2 reports limited activity with 10 "Yes" and 5 "No" responses. L=9, with only 2 "Yes" and 6 "No" responses, suggests potential misclassification or limited operational involvement.

Key Contradictions

A key contradiction arises where "No" responses are associated with operational activity, particularly at L=1 and L=3, where timely data receipt should be prioritized. The minimal number of "Yes" responses at L=9, coupled with a significant number of "No" responses, indicates inconsistencies in reporting or gaps in system integration. These contradictions highlight the need for improved clarity and support to ensure the timeliness of data submissions across all levels.

Recommendations

Efforts should focus on enhancing the timeliness of data receipt, especially at L=1 and L=3, by introducing clear deadlines, automated reminders, and streamlined submission processes. Training programs and capacity-building initiatives can support schools and the ministry in meeting timeliness requirements. Collaboration between GovTech and PPD should prioritize refining the data collection system to address bottlenecks and improve efficiency. Regular audits and feedback mechanisms can identify and address delays, ensuring consistent and timely data submission.

3_2A9. Are source data providers aware of the deadlines set for the reporting of education statistics?

Table 1.21

3_2A9 L * 3_2A9 * ID Crosstabulation

Count					
ID		3_2A9			Total
		0	1		
2	3_2A9 L	1		1	1
	Total			1	1
3	3_2A9 L	1	1	8	9

		2	0	5	5
		3	3	3	6
	Total		4	16	20
4	3_2A9_L	1	18	141	159
		2	1	9	10
		3	6	41	47
		9	2	4	6
	Total		27	195	222
Total	3_2A9_L	1	19	150	169
		2	1	14	15
		3	9	44	53
		9	2	4	6
	Total		31	212	243

General Trends: Patterns in Yes/No Responses

The majority of responses to the main question are "Yes" (212 out of 243), indicating that most source data providers are aware of the deadlines for reporting education statistics. Level L=1 (schools) accounts for the largest share of "Yes" responses (150 out of 212), suggesting strong awareness among schools. L=3 (Ministry) also contributes significantly with 44 "Yes" responses, while L=2 (Dzongkhag) and L=9 exhibit minimal engagement, with 14 and 4 "Yes" responses, respectively. "No" responses are few (31 out of 243), primarily concentrated at L=1 (19), indicating areas where awareness could be improved.

Item-by-Item Analysis

Among "No" responses, L=1 leads with 19, suggesting that a minority of schools remain unaware of the deadlines for reporting education statistics. L=3 contributes 9 "No" responses, indicating similar gaps at the ministry level. Conversely, "Yes" responses are dominated by L=1 (150), highlighting that most schools are well-informed about reporting deadlines. L=3 shows significant support with 44 "Yes" responses, while L=2 reports limited activity with 14 "Yes" and 1 "No" response. Minimal engagement is observed at L=9, with only 4 "Yes" and 2 "No" responses, suggesting potential issues with classification or involvement.

Key Contradictions

Contradictions emerge where "No" responses are associated with operational activity, particularly at L=1 and L=3, where awareness of reporting deadlines is crucial. The minimal engagement and mixed responses at L=9 further highlight inconsistencies in awareness or misclassification. These contradictions underscore the need for enhanced communication and training to ensure all providers are informed about deadlines.

Recommendations

Efforts should focus on improving deadline awareness, particularly at L=1 and L=3, through regular communication, training sessions, and automated reminders. Collaboration between GovTech and PPD should aim to establish clear and standardized protocols for reporting timelines. Cross-level coordination and validation mechanisms can help address gaps and ensure consistent awareness. Feedback systems should be implemented to monitor progress and address issues in real-time, ensuring all providers are aware of and comply with deadlines.

3_2A10. Does the education statistics agency employ systematic follow-up procedures to ensure the timely receipt of source data?

Table 1.22
3 2A10 L * 3 2A10 * ID Crosstabulation

Count					
ID		3 2A10			Total
		0	1		
2	3 2A10_L	1		1	1
	Total			1	1
3	3_2A10_L	1	1	7	8
		2	0	5	5
		3	4	3	7
	Total	5	15	20	
4	3_2A10_L	1	29	105	134
		2	4	8	12
		3	21	48	69
		9	5	2	7
	Total	59	163	222	
Total	3_2A10_L	1	30	113	143
		2	4	13	17
		3	25	51	76
		9	5	2	7
	Total	64	179	243	

General Trends: Patterns in Yes/No Responses

The majority of responses to the main question are "Yes" (179 out of 243), indicating that the education statistics agency is perceived to employ systematic follow-up procedures for timely data receipt. Level L=1 (schools) provides the largest share of "Yes" responses (113 out of 179), underscoring their pivotal role in responding to follow-up procedures. L=3 (Ministry) follows with 51 "Yes" responses, while L=2 (Dzongkhag) and L=9 report minimal engagement, contributing 13 and 2 "Yes" responses, respectively. "No" responses (64 out of 243) are primarily concentrated at L=1 (30), pointing to areas for improvement in the follow-up process.

Item-by-Item Analysis

Among "No" responses, L=1 leads with 30, highlighting gaps in follow-up effectiveness at the school level. L=3 contributes 25 "No" responses, reflecting similar challenges at the ministry level. Conversely, "Yes" responses dominate at L=1 (113), indicating that most schools recognize systematic follow-up procedures. L=3 also shows significant support with 51 "Yes" responses, while L=2 reports limited activity with 13 "Yes" and 4 "No" responses. Minimal engagement is observed at L=9, with only 2 "Yes" and 5 "No" responses, suggesting possible misclassification or lack of involvement in follow-up processes.

Key Contradictions

A key contradiction emerges where "No" responses are paired with operational activity, particularly at L=1 and L=3, where systematic follow-up procedures are critical. The minimal number of "Yes" responses at L=9, coupled with a significant number of "No" responses, highlights inconsistencies in implementation or lack of clarity about follow-up procedures. These

contradictions indicate the need for improved clarity and support to enhance follow-up practices across all levels.

Recommendations

Efforts should focus on strengthening follow-up procedures, particularly at L=1 and L=3, by introducing automated systems, clear escalation protocols, and regular training for staff. Collaboration between GovTech and PPD should aim to standardize follow-up practices and integrate them seamlessly across all levels. Feedback mechanisms should be implemented to monitor the effectiveness of follow-up procedures and address gaps. Routine audits can help identify and rectify delays, ensuring timely and reliable data submission.

3 2A11. Are source data from the school census on enrollments and teachers provided to the area responsible for producing statistics no later than 6 months after the end of the school year?

Table 1.23

3 2A11 L * 3 2A11 * ID Crosstabulation

Count					
ID			3 2A11		Total
			0	1	
2	3 2A11_L	3		1	1
	Total			1	1
3	3_2A11_L	1	0	6	6
		2	3	2	5
		3	4	3	7
		9	2	0	2
	Total		9	11	20
4	3_2A11_L	1	39	101	140
		2	7	14	21
		3	17	36	53
		9	6	2	8
	Total		69	153	222
Total	3_2A11_L	1	39	107	146
		2	10	16	26
		3	21	40	61
		9	8	2	10
	Total		78	165	243

General Trends: Patterns in Yes/No Responses

The majority of responses to the main question are "Yes" (165 out of 243), indicating that source data on enrollments and teachers is generally provided within six months after the school year ends. Level L=1 (schools) contributes the highest number of "Yes" responses (107 out of 165), demonstrating their significant role in timely data submission. L=3 (Ministry) follows with 40 "Yes" responses, while L=2 (Dzongkhag) reports limited engagement, contributing 16 "Yes" responses. "No" responses (78 out of 243) are primarily concentrated at L=1 (39), highlighting areas for improvement at the school level.

Item-by-Item Analysis

Among "No" responses, L=1 leads with 39, reflecting challenges in meeting the six-month deadline for data submission at the school level. L=3 and L=2 contribute 21 and 10 "No" responses,

respectively, indicating similar gaps at higher administrative levels. Conversely, "Yes" responses dominate at L=1 (107), indicating that a majority of schools meet the reporting deadline. L=3 shows moderate support with 40 "Yes" responses, while L=2 contributes 16 "Yes" responses. Minimal engagement is observed at L=9, with only 2 "Yes" and 8 "No" responses, suggesting potential misclassification or lack of involvement.

Key Contradictions

Contradictions arise where "No" responses are associated with operational activity, particularly at L=1 and L=3, where timely data submission is critical. The minimal number of "Yes" responses at L=9, coupled with a higher number of "No" responses, indicates inconsistencies in implementation or lack of awareness about reporting timelines. These contradictions underscore the need for enhanced support and clearer communication to ensure timely data submissions.

Recommendations

Efforts should focus on addressing gaps in timely data submission, particularly at L=1 and L=3, through regular training, automated reminders, and standardized submission protocols. Collaboration between GovTech and PPD should aim to enhance systems for monitoring and ensuring adherence to deadlines. Feedback loops and audits should be implemented to identify and address delays or inconsistencies. Additionally, cross-level coordination mechanisms can help streamline processes and foster accountability for timely reporting.

3 2A12. Are source data on educational expenditures collected from within the ministry of education and other ministries and institutions no later than 6 months after the end of the school year?

Table 1.24

3 2A12 L * 3 2A12 * ID Crosstabulation

Count						
ID				3 2A12		Total
				0	1	
2	3 2A12_L	3		1		1
	Total			1		1
3	3_2A12_L	1	2	2		4
		2	2	2		4
		3	5	4		9
		9	3	0		3
	Total		12	8		20
4	3_2A12_L	1	74	55		129
		2	10	11		21
		3	32	27		59
		9	11	2		13
	Total		127	95		222
Total	3_2A12_L	1	76	57		133
		2	12	13		25
		3	37	32		69
		9	14	2		16
	Total		139	104		243

General Trends: Patterns in Yes/No Responses

The majority of responses to the main question are "No" (139 out of 243), indicating that source data on educational expenditures is often not collected within six months after the school year ends. Level L=1 (schools) contributes the highest number of "No" responses (76 out of 139), reflecting significant delays at this level. L=3 (Ministry) also reports substantial "No" responses (37), while L=2 (Dzongkhag) and L=9 show limited engagement, with 12 and 14 "No" responses, respectively. "Yes" responses (104 out of 243) are mainly concentrated at L=1 (57) and L=3 (32), suggesting some compliance at these levels.

Item-by-Item Analysis

For "No" responses, L=1 leads with 76, highlighting delays in collecting educational expenditure data at the school level. L=3 and L=2 follow with 37 and 12 "No" responses, respectively, indicating similar challenges at higher administrative levels. Conversely, "Yes" responses are strongest at L=1 (57), suggesting that a portion of schools meet the six-month reporting deadline. L=3 shows moderate support with 32 "Yes" responses, while L=2 reports limited compliance with 13 "Yes" responses. Minimal engagement is observed at L=9, where only 2 "Yes" and 14 "No" responses are recorded, suggesting potential misclassification or lack of involvement.

Key Contradictions

A key contradiction arises where "No" responses are paired with operational activity, particularly at L=1 and L=3, where timely reporting of expenditure data is critical. The minimal number of "Yes" responses at L=9, coupled with a higher number of "No" responses, indicates inconsistencies in implementation or lack of awareness about reporting requirements. These contradictions highlight the need for clearer guidelines and enhanced systems to ensure timely data collection.

Recommendations

Efforts should focus on improving the timeliness of expenditure data collection, particularly at L=1 and L=3, through standardized reporting protocols, automated reminders, and capacity-building initiatives. Collaboration between GovTech and PPD should aim to refine the data collection framework and introduce systems that streamline submission processes. Regular audits and feedback loops should be implemented to identify and address delays or inconsistencies. Enhancing cross-level coordination can help improve compliance with deadlines and foster accountability.

Table 1.25
SWOT Analysis for Source Data

Strength	Weakness
<p>Strong School-Level Engagement A majority of "Yes" responses at Level 1 (schools) consistently reflect active involvement in collecting data on infrastructure, teachers, students, school management, educational expenditure, and reporting compliance. This provides a reliable foundation for the EMIS and its statistical capabilities.</p> <p>Central Ministry (L=3) Contributions Some data points indicate strong engagement from the Ministry level, particularly in maintaining registries,</p>	<p>Inconsistent Reporting The presence of significant "No" responses and contradictions across operational levels (L=1 and L=9) undermines data reliability and usability.</p> <p>Resource and Capacity Constraints Gaps in data collection, reporting deadlines, and follow-up practices at Level 1 highlight challenges stemming from limited resources, unclear guidelines, or inefficiencies.</p> <p>Limited Higher-Level Engagement</p>

<p>aligning with international standards (e.g., ISCED), and ensuring data compatibility.</p> <p>Recognition of Timeliness and Compatibility Many schools and ministries acknowledge the importance of timely data submission and EMIS compatibility with official datasets, ensuring relevance for policy-making and resource allocation.</p>	<p>Minimal participation from Dzongkhags (L=2) and other higher-level stakeholders reduces system integration and oversight.</p> <p>Uneven Adoption and Gaps in Standards Disparities in adopting ISCED standards and systematic reporting practices highlight a lack of uniformity across levels.</p> <p>Challenges in Usability A near-equal split in "Yes" and "No" responses for program usability and compatibility at Level 1 reflects ongoing challenges in meeting the technical needs of schools.</p>
<p>Opportunities</p>	<p>Threats</p>
<p>Scaling Best Practices The active participation at Level 1 offers an opportunity to scale effective strategies to Levels 2 and 3, fostering a more integrated and systematic approach across all administrative levels.</p> <p>Standardization and Centralization Establishing national frameworks for reporting, data collection, and follow-up practices can reduce variability and improve reliability.</p> <p>Capacity Building Targeted training for schools, Dzongkhags, and ministries can enhance stakeholder competency and align reporting practices with international standards.</p> <p>Technological Investments Upgrading infrastructure and refining data collection instruments to improve compatibility and usability across levels can strengthen the EMIS.</p> <p>Improved Communication Strategies Enhancing clarity on deadlines and guidelines through centralized communication can address reporting inconsistencies and foster compliance.</p>	<p>Credibility Risks Persistent contradictions, minimal engagement at L=9, and inconsistent reporting threaten the system's reliability and its ability to inform policy decisions.</p> <p>Over-Reliance on Schools Dependence on Level 1 for data collection makes the system vulnerable to gaps or inaccuracies at the school level.</p> <p>Regional and Resource Disparities Uneven access to resources and varying levels of engagement exacerbate systemic inequities, potentially hindering uniform implementation.</p> <p>Resistance to Change Resistance to adopting new frameworks or technologies at lower levels may impede efforts to standardize and improve the system.</p> <p>Sustainability Concerns Limited engagement from higher levels and inconsistent follow-through on reporting deadlines may undermine the system's long-term viability and scalability.</p>

1.4.2 Validation of Source Data

Standard: Source data are consistent with definition, scope, classification, as well as time of recording, reference periods, and valuation of education statistics.



Validation practices are consistently applied across most levels, ensuring alignment with definitions, classifications, and time references. Minor gaps in implementation or integration may exist but do not significantly undermine data reliability.

The EMIS system is rated Established for "Validation of Source Data." While strong engagement at the ministry and school levels demonstrates reliable validation processes, gaps in school-level practices, limited Dzongkhag involvement, and process inefficiencies prevent the system from reaching an Advanced rating. Addressing these weaknesses through capacity building, standardization, and improved resource allocation will enable the system to achieve a higher level of validation reliability.

3_2B1.Are source data consistent with the definitions, scope, and classifications of education statistics?

Table 1.26
3_2B1_L * 3_2B1 * ID Crosstabulation

Count					
ID		3_2B1		Total	
		0	1		
2	3_2B1_L	3		1	1
	Total			1	1
3	3_2B1_L	1	1	6	7
		2	2	2	4
		3	2	5	7
	Total	5	13	18	
4	3_2B1_L	1	34	111	145
		2	1	5	6
		3	17	48	65
	Total	52	164	216	
Total	3_2B1_L	1	35	117	152
		2	3	7	10
		3	19	54	73
	Total	57	178	235	

General Trends: Patterns in Yes/No Responses

The majority of responses to the main question are "Yes" (178 out of 235), indicating that source data are generally consistent with the definitions, scope, and classifications of education statistics. Level L=1 (schools) contributes the highest number of "Yes" responses (117 out of 178), emphasizing schools' pivotal role in ensuring data consistency. L=3 (Ministry) follows with 54 "Yes" responses, while L=2 (Dzongkhag) reports minimal engagement with only 7 "Yes" responses. "No" responses (57 out of 235) are primarily concentrated at L=1 (35), highlighting areas for improvement at the school level.

Item-by-Item Analysis

Among "No" responses, L=1 leads with 35, indicating that some schools struggle to maintain data consistency with established definitions and classifications. L=3 contributes 19 "No" responses, reflecting similar gaps at the ministry level. Conversely, "Yes" responses dominate at L=1 (117), suggesting that the majority of schools achieve consistency in their reporting. L=3 also shows strong engagement with 54 "Yes" responses, while L=2 has limited activity, with only 7 "Yes" and 3 "No" responses. The data highlights the varying degrees of adherence across different operational levels.

Key Contradictions

Contradictions emerge where "No" responses are paired with operational activity, particularly at L=1 and L=3, where adherence to definitions, scope, and classifications is critical. The minimal engagement at L=2 and inconsistencies in responses across levels suggest gaps in understanding or implementing standards. These contradictions underscore the need for enhanced support and clearer guidelines to ensure uniform data consistency.

Recommendations

Efforts should focus on addressing inconsistencies in data adherence, particularly at L=1 and L=3, through regular training, clear guidelines, and standardized reporting templates. Collaboration between GovTech and PPD should aim to align operational practices with established definitions, scope, and classifications. Cross-level validation mechanisms and routine audits can help identify and rectify inconsistencies. Feedback systems should also be implemented to provide real-time support and address challenges faced by schools and the ministry.

3_2B2. Are source data consistent with the time of recording, reference periods, and valuation of education statistics?

Table 1.27

3_2B2_L * 3_2B2 * ID Crosstabulation

Count			3_2B2		Total
ID			0	1	
2	3_2B2_L	3		1	1
	Total			1	1
3	3_2B2_L	1	0	6	6
		2	1	3	4
		3	5	3	8
	Total		6	12	18
4	3_2B2_L	1	37	108	145
		2	2	6	8
		3	18	43	61
	Total		57	157	214
Total	3_2B2_L	1	37	114	151
		2	3	9	12
		3	23	47	70
	Total		63	170	233

General Trends

The majority of responses to the main question are "Yes" (170 out of 233), indicating that source data are generally consistent with the time of recording, reference periods, and valuation of education statistics. Level L=1 (schools) provides the largest share of "Yes" responses (114 out of 170), demonstrating strong adherence at the school level. L=3 (Ministry) follows with 47 "Yes" responses, while L=2 (Dzongkhag) contributes minimally with only 9 "Yes" responses. "No" responses (63 out of 233) are concentrated at L=1 (37), reflecting areas for improvement at the school level.

Item-by-Item Analysis

Among "No" responses, L=1 leads with 37, indicating challenges at the school level in maintaining consistency with time of recording, reference periods, and valuation. L=3 contributes 23 "No" responses, showing similar gaps at the ministry level, while L=2 records minimal "No" responses (3). Conversely, "Yes" responses dominate at L=1 (114), suggesting that most schools align well with the established criteria. L=3 shows moderate compliance with 47 "Yes" responses, while L=2 exhibits limited engagement, with only 9 "Yes" responses. The data highlights the need for targeted improvements at all levels.

Key Contradictions

Contradictions emerge where "No" responses are paired with operational activity, particularly at L=1 and L=3, where maintaining alignment with recording and valuation criteria is essential. The low engagement at L=2 and inconsistencies at L=3 suggest gaps in understanding or implementation of standards. These contradictions point to the need for improved support and standardized practices to enhance adherence.

Recommendations

Efforts should focus on addressing inconsistencies, particularly at L=1 and L=3, through training programs, standardized reporting templates, and regular audits. Collaboration between GovTech and PPD should aim to align operational practices with established criteria for time of recording, reference periods, and valuation. Cross-level validation mechanisms should be implemented to identify and rectify discrepancies. Feedback systems should be established to provide real-time support and improve compliance at all levels.

3_2B3. Are administrative data audited to check the accuracy of source data (e.g., field collection inspection, random post-enumeration checks)?

Table 1.28

3_2B3 L * 3_2B3 * ID Crosstabulation

Count					
ID			3_2B3		Total
			0	1	
2	3_2B3_L	3		1	1
	Total			1	1
3	3_2B3_L	1	4	0	4
		2	4	2	6
		3	6	1	7
	Total		14	3	17
4	3_2B3_L	1	77	56	133
		2	8	9	17
		3	32	25	57
	Total		117	90	207
Total	3_2B3_L	1	81	56	137
		2	12	11	23
		3	38	27	65
	Total		131	94	225

General Trends: Patterns in Yes/No Responses

The majority of responses to the main question are "No" (131 out of 225), indicating that administrative data audits, such as field collection inspections and random post-enumeration checks, are not consistently performed. Level L=1 (schools) contributes the highest number of "No" responses (81 out of 131), highlighting significant gaps at the school level. L=3 (Ministry) follows with 38 "No" responses, while L=2 (Dzongkhag) reports fewer "No" responses (12). "Yes" responses (94 out of 225) are concentrated at L=1 (56) and L=3 (27), suggesting some degree of auditing at these levels.

Item-by-Item Analysis

Among "No" responses, L=1 leads with 81, indicating substantial challenges in implementing audits to verify the accuracy of administrative data at the school level. L=3 follows with 38 "No" responses, reflecting similar gaps at the ministry level, while L=2 reports minimal engagement with 12 "No" responses. Conversely, "Yes" responses are highest at L=1 (56), suggesting that some schools conduct data audits. L=3 shows moderate support with 27 "Yes" responses, and L=2 contributes 11 "Yes" responses. The data highlights a need for more consistent auditing practices across all levels.

Key Contradictions

Contradictions emerge where "No" responses are paired with operational activity, particularly at L=1 and L=3, where regular data audits should be a standard practice. The limited engagement at L=2 and inconsistencies in responses across levels suggest gaps in implementing or understanding auditing protocols. These contradictions point to the need for more rigorous auditing systems and clear guidelines to ensure accurate administrative data.

Recommendations

Efforts should focus on addressing gaps in data auditing, particularly at L=1 and L=3, through the establishment of systematic auditing protocols, regular field inspections, and random post-enumeration checks. Collaboration between GovTech and PPD should aim to standardize auditing practices and provide training to operational staff. Cross-level coordination and feedback mechanisms should be implemented to identify and rectify inconsistencies. Additionally, enhancing accountability measures and introducing automated tools for data verification can improve the overall reliability of administrative data.

3_2B4. Are professional development actions taken (e.g., continuing education for data collectors) to improve the accuracy of source data?

Table 1.29

3_2B4 L * 3_2B4 * ID Crosstabulation

Count					
ID		3_2B4			Total
		0	1		
2	3_2B4_L	3		1	1
	Total			1	1
3	3_2B4_L	1	0	2	2
		2	3	3	6
		3	6	4	10
	Total	9	9	18	

4	3_2B4_L	1	76	58	134
		2	7	7	14
		3	41	18	59
	Total		124	83	207
Total	3_2B4_L	1	76	60	136
		2	10	10	20
		3	47	23	70
	Total		133	93	226

General Trends: Patterns in Yes/No Responses

The majority of responses to the main question are "No" (133 out of 226), indicating that professional development actions, such as continuing education for data collectors, are not consistently undertaken to improve the accuracy of source data. Level L=1 (schools) contributes the highest number of "No" responses (76 out of 133), reflecting significant gaps in professional development at this level. L=3 (Ministry) follows with 47 "No" responses, while L=2 (Dzongkhag) reports the fewest "No" responses (10). "Yes" responses (93 out of 226) are primarily concentrated at L=1 (60) and L=3 (23), suggesting some initiatives at these levels.

Item-by-Item Analysis

Among "No" responses, L=1 leads with 76, indicating that schools face significant challenges in implementing professional development for data collectors. L=3 and L=2 contribute 47 and 10 "No" responses, respectively, reflecting gaps at higher administrative levels. Conversely, "Yes" responses are strongest at L=1 (60), suggesting that some schools prioritize professional development. L=3 shows moderate engagement with 23 "Yes" responses, and L=2 records equal "Yes" and "No" responses (10 each), highlighting limited but balanced efforts at this level.

Key Contradictions

Contradictions arise where "No" responses are paired with operational activity, particularly at L=1 and L=3, where professional development initiatives are crucial for data accuracy. The equal split of "Yes" and "No" responses at L=2 suggests inconsistencies in implementation or awareness of professional development actions. These contradictions highlight the need for more systematic and consistent efforts across all levels.

Recommendations

Efforts should focus on implementing structured professional development programs, particularly at L=1 and L=3, to enhance data collectors' skills and ensure accurate reporting. Collaboration between GovTech and PPD should aim to establish training modules and continuous learning opportunities for data collectors at all levels. Introducing standardized guidelines for professional development and monitoring their implementation can help bridge gaps. Feedback loops and evaluations should be conducted to assess the impact of these initiatives and address challenges promptly.

3_2B5a. Is accuracy of data from all sources used to compile statistics routinely reviewed in terms of monitored events?

Table 1.30

3_2B5a L * 3_2B5a * ID Crosstabulation

Count					
ID		3_2B5a			Total
		0	1		
2	3_2B5a_L	3		1	1
	Total			1	1
3	3_2B5a_L	1	2	2	4
		2	3	4	7
		3	5	2	7
	Total		10	8	18
4	3_2B5a_L	1	51	88	139
		2	3	14	17
		3	27	27	54
	Total		81	129	210
Total	3_2B5a_L	1	53	90	143
		2	6	18	24
		3	32	30	62
	Total		91	138	229

General Trends: Patterns in Yes/No Responses

The majority of responses to the main question are "Yes" (138 out of 229), indicating that the accuracy of data from all sources used to compile statistics is routinely reviewed for monitored events. Level L=1 (schools) provides the largest share of "Yes" responses (90 out of 138), suggesting that schools play a key role in reviewing data accuracy. L=3 (Ministry) follows with 30 "Yes" responses, while L=2 (Dzongkhag) contributes 18 "Yes" responses. "No" responses (91 out of 229) are concentrated at L=1 (53), reflecting areas for improvement at the school level.

Item-by-Item Analysis

Among "No" responses, L=1 leads with 53, indicating that many schools face challenges in routinely reviewing data accuracy. L=3 contributes 32 "No" responses, reflecting gaps at the ministry level, while L=2 reports minimal "No" responses (6). Conversely, "Yes" responses dominate at L=1 (90), showing that a majority of schools engage in data accuracy reviews. L=3 shows moderate compliance with 30 "Yes" responses, while L=2 has limited but notable engagement, with 18 "Yes" responses. The data highlights a need for more systematic approaches across all levels.

Key Contradictions

Contradictions emerge where "No" responses are paired with operational activity, particularly at L=1 and L=3, where routine reviews of data accuracy should be a standard practice. The relatively low engagement at L=2, despite a moderate number of "Yes" responses, suggests inconsistencies in implementing or reporting data accuracy reviews. These contradictions indicate the need for improved clarity and systematic procedures to ensure consistent reviews.

Recommendations

Efforts should focus on addressing gaps in data accuracy reviews, particularly at L=1 and L=3, through standardized protocols, training programs, and automated review systems. Collaboration between GovTech and PPD should aim to align operational practices with routine review requirements and provide resources to support these efforts. Cross-level validation mechanisms and regular audits should be implemented to identify and rectify inconsistencies. Feedback systems should also be established to monitor the effectiveness of review processes and address challenges promptly.

3 2B5b. Is accuracy of data from all sources used to compile statistics routinely reviewed in terms of population coverage?

Table 1.31

3 2B5b L * 3 2B5b * ID Crosstabulation

Count					
ID		3 2B5b		Total	
		0	1		
2	3 2B5b L	3		1	1
	Total			1	1
3	3_2B5b_L	1	1	1	2
		2	3	3	6
		3	7	2	9
	Total		11	6	17
4	3_2B5b_L	1	74	58	132
		2	9	9	18
		3	35	22	57
	Total		118	89	207
Total	3_2B5b_L	1	75	59	134
		2	12	12	24
		3	42	25	67
	Total		129	96	225

General Trends: Patterns in Yes/No Responses

The majority of responses to the main question are "No" (129 out of 225), indicating that data accuracy in terms of population coverage is not routinely reviewed across all sources used to compile statistics. Level L=1 (schools) contributes the highest number of "No" responses (75 out of 129), reflecting significant gaps at the school level. L=3 (Ministry) follows with 42 "No" responses, while L=2 (Dzongkhag) reports fewer "No" responses (12). "Yes" responses (96 out of 225) are concentrated at L=1 (59) and L=3 (25), suggesting some adherence to reviewing population coverage at these levels.

Item-by-Item Analysis

Among "No" responses, L=1 leads with 75, indicating substantial challenges in routinely reviewing data accuracy related to population coverage at the school level. L=3 follows with 42 "No" responses, highlighting similar gaps at the ministry level. Conversely, "Yes" responses dominate at L=1 (59), showing that some schools do engage in population coverage reviews. L=3 shows moderate compliance with 25 "Yes" responses, while L=2 has balanced engagement, with 12 "Yes" and 12 "No" responses. The data indicates a need for more systematic and consistent approaches to reviewing population coverage across all levels.

Key Contradictions

Contradictions arise where "No" responses are paired with operational activity, particularly at L=1 and L=3, where population coverage reviews are essential for maintaining data accuracy. The equal split of "Yes" and "No" responses at L=2 suggests inconsistencies in implementing or reporting such reviews. These contradictions point to the need for enhanced clarity and standardization in population coverage review processes.

Recommendations

Efforts should focus on establishing robust mechanisms for reviewing population coverage at all levels, particularly at L=1 and L=3, where the majority of challenges are reported. Collaboration between GovTech and PPD should aim to create standardized review protocols, provide training, and introduce automated systems to facilitate coverage checks. Regular audits and cross-level validation should be implemented to identify and address discrepancies. Feedback mechanisms can help ensure continuous improvement and address any operational challenges.

3_2B5c. Is accuracy of data from all sources used to compile statistics routinely reviewed in terms of timeframes (i.e., data is reviewed in the necessary timeframe to compile statistics and perform other required EMIS functions such as the dissemination of report cards)?

Table 1.32

3_2B5c_L * 3_2B5c * ID Crosstabulation

Count					
ID		3_2B5c			Total
		0	1		
2	3_2B5c_L	3		1	1
	Total			1	1
3	3_2B5c_L	1	0	4	4
		2	3	3	6
		3	4	4	8
	Total	7	11	18	
4	3_2B5c_L	1	51	86	137
		2	5	9	14
		3	26	36	62
	Total	82	131	213	
Total	3_2B5c_L	1	51	90	141
		2	8	12	20
		3	30	41	71
	Total	89	143	232	

General Trends: Patterns in Yes/No Responses

The majority of responses to the main question are "Yes" (143 out of 232), indicating that data accuracy in terms of timeframes is routinely reviewed across many levels of operation. Level L=1 (schools) provides the largest share of "Yes" responses (90 out of 143), reflecting substantial engagement at the school level. L=3 (Ministry) follows with 41 "Yes" responses, while L=2 (Dzongkhag) contributes 12 "Yes" responses. "No" responses (89 out of 232) are primarily concentrated at L=1 (51), highlighting areas for improvement in timely data reviews at the school level.

Item-by-Item Analysis

Among "No" responses, L=1 leads with 51, suggesting that many schools face challenges in ensuring that data is reviewed within the necessary timeframe. L=3 contributes 30 "No" responses, reflecting similar gaps at the ministry level. Conversely, "Yes" responses are strongest at L=1 (90), indicating that most schools are engaged in timely data reviews. L=3 shows moderate compliance with 41 "Yes" responses, while L=2 has limited activity, with 12 "Yes" and 8 "No" responses. The data reveals variations in the consistency of timely data reviews across operational levels.

Key Contradictions

Contradictions arise where "No" responses are paired with operational activity, particularly at L=1 and L=3, where timely data reviews are essential for compiling statistics and performing other EMIS functions. The balanced distribution of "Yes" and "No" responses at L=2 suggests inconsistencies in implementing or reporting timeframe reviews. These contradictions highlight the need for standardized protocols to ensure timely data reviews.

Recommendations

Efforts should focus on addressing delays in data reviews, particularly at L=1 and L=3, through automated review systems, clear guidelines, and targeted training programs. Collaboration between GovTech and PPD should aim to create a standardized framework for timeframe reviews, ensuring alignment across all levels. Routine audits and cross-level validations should be implemented to identify and address bottlenecks. Feedback loops can help monitor progress and refine practices to improve the timeliness of data reviews.

3_2B6. Is information compiled on coverage, sampling errors, non-response errors (e.g., non-response rates for socioeconomic groups), and percentage of missing or imputed data by methods of imputation?

Table 1.33
3_2B6 L * 3_2B6 * ID Crosstabulation

Count					
ID		3_2B6			Total
			0	1	
2	3_2B6_L	3		1	1
	Total			1	1
3	3_2B6_L	1	3	0	3
		2	3	1	4
		3	7	3	10
	Total		13	4	17
4	3_2B6_L	1	83	50	133
		2	7	3	10
		3	42	18	60
	Total		132	71	203
Total	3_2B6_L	1	86	50	136
		2	10	4	14
		3	49	22	71
	Total		145	76	221

General Trends: Patterns in Yes/No Responses

The majority of responses to the main question are "No" (145 out of 221), indicating that information on coverage, sampling errors, non-response errors, and percentage of missing or imputed data by methods of imputation is not consistently compiled. Level L=1 (schools) contributes the highest number of "No" responses (86 out of 145), reflecting significant gaps at the school level. L=3 (Ministry) follows with 49 "No" responses, while L=2 (Dzongkhag) contributes fewer "No" responses (10). "Yes" responses (76 out of 221) are concentrated at L=1 (50) and L=3 (22), suggesting some level of adherence at these levels.

Item-by-Item Analysis

Among "No" responses, L=1 leads with 86, indicating substantial challenges at the school level in compiling information on errors and missing data. L=3 follows with 49 "No" responses, reflecting similar gaps at the ministry level. Conversely, "Yes" responses are strongest at L=1 (50), suggesting that some schools do engage in error and missing data tracking. L=3 shows moderate compliance with 22 "Yes" responses, while L=2 has limited activity, with only 4 "Yes" and 10 "No" responses. This indicates uneven implementation and understanding of error tracking across levels.

Key Contradictions

Contradictions arise where "No" responses are paired with operational activity, particularly at L=1 and L=3, where compiling detailed information on errors and missing data is critical for ensuring data quality. The minimal "Yes" responses at L=2, coupled with a higher number of "No" responses, suggest gaps in implementation or awareness of data error tracking practices. These contradictions highlight the need for clear protocols and systematic processes to ensure consistent data error monitoring.

Recommendations

Efforts should focus on establishing standardized procedures for tracking coverage, sampling errors, non-response errors, and missing or imputed data across all levels, particularly at L=1 and L=3. Collaboration between GovTech and PPD should aim to provide training on error monitoring and introduce automated tools to support this process. Routine audits and cross-level validations should be conducted to identify gaps and ensure consistent reporting. Feedback mechanisms can help improve practices and provide real-time support for addressing challenges in data error monitoring.

3_2B7a. Is the use of school registration promoted and is accuracy periodically monitored by assessing whether students dropping out are removed from the register or identified as no longer enrolled?

Table 1.34

3_2B7a_L * 3_2B7a * ID Crosstabulation

Count					
ID			3_2B7a		Total
			0	1	
2	3_2B7a_L	3		1	1
	Total			1	1
3	3_2B7a_L	1	2	6	8

		2	3	3	6
		3	2	4	6
	Total		7	13	20
4	3_2B7a_L	1	37	127	164
		2	1	4	5
		3	20	24	44
	Total		58	155	213
Total	3_2B7a_L	1	39	133	172
		2	4	7	11
		3	22	29	51
	Total		65	169	234

General Trends: Patterns in Yes/No Responses

The majority of responses to the main question are "Yes" (169 out of 234), indicating that the use of school registration is generally promoted, and its accuracy is periodically monitored. Level L=1 (schools) contributes the largest share of "Yes" responses (133 out of 169), highlighting schools' critical role in maintaining accurate student registration records. L=3 (Ministry) follows with 29 "Yes" responses, while L=2 (Dzongkhag) contributes only 7 "Yes" responses, indicating limited engagement at this level. "No" responses (65 out of 234) are concentrated at L=1 (39), suggesting areas where monitoring and accuracy can be improved.

Item-by-Item Analysis

Among "No" responses, L=1 leads with 39, suggesting that many schools face challenges in promoting and monitoring the accuracy of school registration. L=3 contributes 22 "No" responses, indicating similar gaps at the ministry level, while L=2 reports minimal "No" responses (4). Conversely, "Yes" responses dominate at L=1 (133), reflecting that most schools actively engage in promoting and monitoring registration accuracy. L=3 shows moderate compliance with 29 "Yes" responses, while L=2 exhibits limited activity, with 7 "Yes" responses. This indicates variability in the level of adherence across operational levels.

Key Contradictions

Contradictions arise where "No" responses are paired with operational activity, particularly at L=1 and L=3, where maintaining accurate student registration is essential. The minimal engagement at L=2, coupled with the relatively low number of "Yes" responses, suggests inconsistencies in implementing or reporting registration monitoring practices. These contradictions highlight the need for clearer guidelines and support to ensure uniform adherence.

Recommendations

Efforts should focus on strengthening systems to promote and monitor school registration, particularly at L=1 and L=3, through regular training, standardized protocols, and automated tracking tools. Collaboration between GovTech and PPD should aim to create a comprehensive framework for monitoring student registration and addressing inaccuracies. Cross-level audits and validation mechanisms should be implemented to ensure consistency. Feedback loops can provide real-time insights and support to address challenges, improving adherence across all levels.

3_2B7b. Is the use of school registration promoted and is accuracy periodically monitored by assessing whether students moving or changing schools are removed from the register or identified as no longer enrolled?

Table 1.35

3_2B7b_L * 3_2B7b * ID Crosstabulation

Count					
ID		3_2B7b		Total	
		0	1		
2	3_2B7b_L	3		1	1
	Total			1	1
3	3_2B7b_L	1	0	8	8
		2	3	3	6
		3	2	4	6
	Total	5	15	20	
4	3_2B7b_L	1	24	148	172
		2	1	6	7
		3	9	28	37
	Total	34	182	216	
Total	3_2B7b_L	1	24	156	180
		2	4	9	13
		3	11	33	44
	Total	39	198	237	

General Trends: Patterns in Yes/No Responses

The majority of responses to the main question are "Yes" (198 out of 237), indicating that the use of school registration is generally promoted, and accuracy is periodically monitored to ensure that students moving or changing schools are appropriately updated in the registers. Level L=1 (schools) contributes the largest share of "Yes" responses (156 out of 198), highlighting schools' critical role in maintaining accurate registration records. L=3 (Ministry) follows with 33 "Yes" responses, while L=2 (Dzongkhag) contributes only 9 "Yes" responses, indicating limited engagement at this level. "No" responses (39 out of 237) are concentrated at L=1 (24), suggesting areas where monitoring and accuracy can still be improved.

Item-by-Item Analysis

Among "No" responses, L=1 leads with 24, reflecting challenges in ensuring that student movements are accurately reflected in school registers. L=3 contributes 11 "No" responses, indicating similar gaps at the ministry level. Conversely, "Yes" responses dominate at L=1 (156), showing that most schools actively monitor student movement and update their records accordingly. L=3 shows moderate compliance with 33 "Yes" responses, while L=2 exhibits minimal activity, with only 9 "Yes" and 4 "No" responses. This variability suggests room for improvement in uniformity and adherence to monitoring practices across operational levels.

Key Contradictions

Contradictions arise where "No" responses are paired with operational activity, particularly at L=1 and L=3, where accurate student registration is essential. The limited engagement at L=2, combined with a low number of "Yes" responses, indicates gaps in implementing or reporting registration monitoring practices. These contradictions point to a need for better communication and standardized processes to ensure uniform adherence.

Recommendations

Efforts should focus on strengthening systems to monitor and update student registration, particularly at L=1 and L=3, through automated tools, training, and clear guidelines for tracking student movements. Collaboration between GovTech and PPD should aim to establish a standardized framework for monitoring registration updates and addressing inaccuracies. Cross-level validation and routine audits should be implemented to ensure consistency. Feedback mechanisms can provide ongoing support and help refine processes to achieve greater uniformity.

3 2B7c. Is the use of school registration promoted and is accuracy periodically monitored by assessing whether the registry includes all students currently enrolled?

Table 1.36

3 2B7c L * 3 2B7c * ID Crosstabulation

Count					
ID			3 2B7c		Total
			0	1	
2	3 2B7c L	3		1	1
	Total			1	1
3	3_2B7c_L	1	0	9	9
		2	2	3	5
		3	4	1	5
	Total		6	13	19
4	3_2B7c_L	1	19	161	180
		2	0	5	5
		3	11	22	33
	Total		30	188	218
Total	3_2B7c_L	1	19	170	189
		2	2	8	10
		3	15	24	39
	Total		36	202	238

General Trends: Patterns in Yes/No Responses

The majority of responses to the main question are "Yes" (202 out of 238), indicating that the use of school registration is widely promoted and its accuracy is periodically monitored to ensure that the registry includes all students currently enrolled. Level L=1 (schools) contributes the largest share of "Yes" responses (170 out of 202), reflecting strong engagement at the school level in maintaining comprehensive student records. L=3 (Ministry) follows with 24 "Yes" responses, while L=2 (Dzongkhag) contributes only 8 "Yes" responses, indicating limited participation at this level. "No" responses (36 out of 238) are primarily concentrated at L=1 (19), suggesting areas for further improvement in registration practices.

Item-by-Item Analysis

Among "No" responses, L=1 leads with 19, indicating that some schools face challenges in ensuring that their student registries are complete and accurate. L=3 contributes 15 "No" responses, reflecting gaps at the ministry level, while L=2 records minimal "No" responses (2). Conversely, "Yes" responses dominate at L=1 (170), suggesting that the majority of schools actively monitor their registries to ensure all currently enrolled students are included. L=3 shows moderate

compliance with 24 "Yes" responses, while L=2 exhibits minimal activity, with only 8 "Yes" responses. This variability underscores the need for more consistent practices across all levels.

Key Contradictions

Contradictions emerge where "No" responses are paired with operational activity, particularly at L=1 and L=3, where maintaining accurate and comprehensive student registries is crucial. The low engagement at L=2, coupled with relatively few "Yes" responses, suggests inconsistencies in the implementation or reporting of registration monitoring practices. These contradictions highlight the need for targeted efforts to standardize and enhance monitoring systems.

Recommendations

Efforts should focus on strengthening systems for monitoring school registrations, particularly at L=1 and L=3, through regular training, standardized protocols, and automated tools for updating registries. Collaboration between GovTech and PPD should aim to establish a uniform framework for monitoring student registrations and addressing inaccuracies. Routine audits and cross-level validation processes should be implemented to ensure consistency. Feedback mechanisms can provide ongoing support and insights to refine registration practices across all levels.

General Trends: Patterns in Yes/No Responses

The majority of responses to the main question are "Yes" (202 out of 238), indicating that the use of school registration is widely promoted and its accuracy is periodically monitored to ensure that the registry includes all students currently enrolled. Level L=1 (schools) contributes the largest share of "Yes" responses (170 out of 202), reflecting strong engagement at the school level in maintaining comprehensive student records. L=3 (Ministry) follows with 24 "Yes" responses, while L=2 (Dzongkhag) contributes only 8 "Yes" responses, indicating limited participation at this level. "No" responses (36 out of 238) are primarily concentrated at L=1 (19), suggesting areas for further improvement in registration practices.

Item-by-Item Analysis

Among "No" responses, L=1 leads with 19, indicating that some schools face challenges in ensuring that their student registries are complete and accurate. L=3 contributes 15 "No" responses, reflecting gaps at the ministry level, while L=2 records minimal "No" responses (2). Conversely, "Yes" responses dominate at L=1 (170), suggesting that the majority of schools actively monitor their registries to ensure all currently enrolled students are included. L=3 shows moderate compliance with 24 "Yes" responses, while L=2 exhibits minimal activity, with only 8 "Yes" responses. This variability underscores the need for more consistent practices across all levels.

Key Contradictions

Contradictions emerge where "No" responses are paired with operational activity, particularly at L=1 and L=3, where maintaining accurate and comprehensive student registries is crucial. The low engagement at L=2, coupled with relatively few "Yes" responses, suggests inconsistencies in the implementation or reporting of registration monitoring practices. These contradictions highlight the need for targeted efforts to standardize and enhance monitoring systems.

Recommendations

Efforts should focus on strengthening systems for monitoring school registrations, particularly at L=1 and L=3, through regular training, standardized protocols, and automated tools for updating registries. Collaboration between GovTech and PPD should aim to establish a uniform framework for monitoring student registrations and addressing inaccuracies. Routine audits and cross-level validation processes should be implemented to ensure consistency. Feedback mechanisms can provide ongoing support and insights to refine registration practices across all levels.

3 2B8. In terms of expenditure data, are data from different government agencies incorporated and counted only at the level where actual expenditure occurs?

Table 1.37

3 2B8 L * 3 2B8 * ID Crosstabulation

Count					
ID		3 2B8			Total
		0	1		
2	3 2B8_L	3		1	1
	Total			1	1
3	3_2B8_L	1	5	0	5
		2	4	1	5
		3	5	1	6
	Total		14	2	16
4	3_2B8_L	1	88	50	138
		2	6	10	16
		3	36	15	51
	Total		130	75	205
Total	3_2B8_L	1	93	50	143
		2	10	11	21
		3	41	17	58
	Total		144	78	222

General Trends: Patterns in Yes/No Responses

The majority of responses to the main question are "No" (144 out of 222), indicating that expenditure data from different government agencies are not consistently incorporated and counted only at the level where the actual expenditure occurs. Level L=1 (schools) contributes the highest number of "No" responses (93 out of 144), reflecting significant gaps in expenditure tracking at the school level. L=3 (Ministry) follows with 41 "No" responses, while L=2 (Dzongkhag) reports fewer "No" responses (10). "Yes" responses (78 out of 222) are concentrated at L=1 (50) and L=3 (17), indicating some degree of compliance at these levels.

Item-by-Item Analysis

Among "No" responses, L=1 leads with 93, highlighting challenges in accurately recording expenditures at the level where they occur. L=3 contributes 41 "No" responses, suggesting similar gaps at the ministry level, while L=2 records minimal "No" responses (10). Conversely, "Yes" responses are strongest at L=1 (50), showing that some schools incorporate and count expenditures at the appropriate level. L=3 shows moderate compliance with 17 "Yes" responses, while L=2 has limited engagement, with only 11 "Yes" responses. This variability suggests the need for more consistent practices in expenditure tracking across all levels.

Key Contradictions

Contradictions arise where "No" responses are paired with operational activity, particularly at L=1 and L=3, where accurate expenditure tracking is essential for maintaining financial accountability. The relatively low engagement at L=2, coupled with a balanced distribution of "Yes" and "No" responses, suggests inconsistencies in implementing or reporting expenditure tracking practices. These contradictions point to the need for better standardization and enforcement of expenditure recording guidelines.

Recommendations

Efforts should focus on establishing clear protocols for recording expenditures at the level where they occur, particularly at L=1 and L=3. Collaboration between GovTech and PPD should aim to create standardized templates and automated systems for expenditure tracking, ensuring alignment across all levels. Training programs should be introduced to improve understanding and implementation of these protocols. Routine audits and feedback mechanisms can help identify and rectify discrepancies, improving compliance and accountability.

3 2B9. Are institutions and programs for reporting education expenditure data the same as the institutions for the reporting of staff and enrollment data?

Table 1.38

3 2B9 L * 3 2B9 * ID Crosstabulation

Count					
ID		3 2B9		Total	
2	3 2B9_L	3		1	1
	Total			1	1
3	3_2B9_L	1	2	2	4
		2	6	1	7
		3	5	0	5
	Total		13	3	16
4	3_2B9_L	1	84	59	143
		2	5	9	14
		3	34	16	50
	Total		123	84	207
Total	3_2B9_L	1	86	61	147
		2	11	10	21
		3	39	17	56
	Total		136	88	224

General Trends: Patterns in Yes/No Responses

The majority of responses to the main question are "No" (136 out of 224), indicating that the institutions and programs for reporting education expenditure data are not consistently the same as those for reporting staff and enrollment data. Level L=1 (schools) contributes the highest number of "No" responses (86 out of 136), reflecting substantial gaps in institutional consistency at the school level. L=3 (Ministry) follows with 39 "No" responses, while L=2 (Dzongkhag) contributes 11 "No" responses, indicating some variation across levels. "Yes" responses (88 out of 224) are concentrated at L=1 (61) and L=3 (17), showing partial alignment in some instances.

Item-by-Item Analysis

Among "No" responses, L=1 leads with 86, suggesting that many schools face challenges in aligning their reporting structures for education expenditures with those for staff and enrollment data. L=3 follows with 39 "No" responses, indicating similar inconsistencies at the ministry level. Conversely, "Yes" responses are strongest at L=1 (61), suggesting that some schools have aligned reporting practices. L=3 shows moderate compliance with 17 "Yes" responses, while L=2 has nearly balanced engagement, with 10 "Yes" and 11 "No" responses. This variability highlights inconsistencies in institutional practices across levels.

Key Contradictions

Contradictions arise where "No" responses are paired with operational activity, particularly at L=1 and L=3, where alignment in reporting systems is essential for streamlining data management. The relatively even split at L=2 suggests inconsistencies in implementation or reporting practices at the Dzongkhag level. These contradictions emphasize the need for better integration of reporting systems to ensure uniformity across data categories.

Recommendations

Efforts should focus on standardizing reporting systems across all levels, particularly at L=1 and L=3, to align expenditure reporting with staff and enrollment data. Collaboration between GovTech and PPD should aim to establish unified reporting frameworks and provide training to operational staff on their use. Automated data integration systems should be introduced to reduce redundancies and improve consistency. Routine audits and feedback mechanisms should be implemented to monitor progress and address gaps in institutional practices.

Table 1.39
SWOT Analysis for Validation of Source Data

Strength	Weakness
<p>Strong Engagement and Awareness Both at Level 1 (schools) and Level 3 (ministries), there is significant engagement and awareness, with adherence to key practices such as registration, data review, and expenditure tracking. This engagement lays a solid foundation for improvement and system consistency.</p> <p>Commitment to Data Quality and Oversight Schools actively support registration accuracy and data consistency, while ministries show consistent engagement in scaling best practices, such as auditing and professional development, across levels. This commitment suggests potential for strong central oversight and leadership in improving education management systems (EMIS).</p> <p>Potential for Standardization Engagement at Level 3 in all areas (registration, financial reporting, and data integration) offers an opportunity to standardize practices, ensuring greater consistency, reliability, and scalability of systems across operational levels.</p>	<p>Gaps in School-Level Practices: Despite strong engagement at Level 1, there are significant gaps in practices such as error tracking, professional development, and auditing. These gaps, often due to resource constraints or unclear guidelines, undermine the effectiveness of school-level operations.</p> <p>Limited Engagement at Level 2 (Dzongkhags) Minimal involvement from intermediary levels weakens coordination between schools and ministries, creating inefficiencies and a lack of integration that impacts system reliability across various areas.</p> <p>Resource and Process Constraints There are significant limitations in timely reviews, data updates, and accurate tracking, which point to inefficiencies in systems, processes, and resource allocation.</p> <p>Inconsistent Implementation Across Levels Discrepancies in adhering to standardized practices across different levels of the system could compromise the credibility and reliability of education statistics, financial reports, and overall data integration.</p>

Opportunities	Threats
<p>Scaling and Standardizing Practices The strong engagement at Level 3 presents a unique opportunity to develop and disseminate best practices across all levels. This includes improvements in auditing, professional development, error tracking, and registration monitoring, which would lead to more cohesive and reliable systems.</p> <p>Capacity Building and Training Targeted training programs at both the school and Dzongkhag levels can address gaps in professional development, standardizing practices and ensuring adherence to established guidelines.</p> <p>Improving Monitoring Systems Upgrading error tracking, registration monitoring, and data review technologies can enhance the accuracy and reliability of education management, facilitating better decision-making and policy formulation.</p> <p>Centralization and Scalability There is an opportunity to centralize systems and improve coordination across operational levels, fostering scalability and increasing the effectiveness of practices that are currently underdeveloped.</p>	<p>Credibility and Data Integrity Risks Inconsistent implementation and minimal engagement at Level 2 could undermine the credibility and reliability of compiled statistics, which may adversely affect decision-making, policy formulation, and overall system effectiveness.</p> <p>Dependence on Resource-Constrained Levels Over-reliance on schools without adequate support from intermediary levels or ministries increases the risk of data inaccuracies, system inefficiencies, and a lack of integration across data categories.</p> <p>Delayed Implementation and Reporting Inefficiencies in processes such as error tracking, population coverage reviews, and timely reporting can lead to delays in critical EMIS functions like issuing report cards and finalizing enrollment data.</p> <p>Resistance to Change and Adoption Resistance to adopting new standards and practices across various levels of the system could hinder the overall scalability and effectiveness of improvements, leading to slow implementation of necessary changes.</p>

1.4.3 Statistical Techniques

Standard: Statistical techniques are used to calculate accurate rates and derived indicators.



Basic statistical techniques are recognized and occasionally applied, but inconsistencies in implementation and lack of training hinder reliability. Methodologies for imputation, estimation, and projections are used sporadically and lack system-wide integration.

The EMIS system is rated Emerging for "Statistical Techniques." While there is recognition of statistical practices at L1 and L3 and efforts to address key issues, gaps in training, inconsistent implementation, and minimal engagement at L2 prevent the system from reaching a higher level. Addressing these weaknesses through capacity building, standardization, and improved integration will enhance the reliability and accuracy of statistical techniques, enabling advancement to higher rubric levels.

3_2C1. Are there imputation methods and estimation techniques in place (e.g., sampling weights, calibration weights) that employ sound statistical techniques?

Table 1.40
3_2C1 L * 3_2C1 * ID Crosstabulation

Count					
ID			3_2C1		Total
			0	1	
2	3_2C1_L	3		1	1

	Total		1	1
3	3_2C1_L	1	2	2
		2	3	3
		3	4	2
	Total	9	7	16
4	3_2C1_L	1	94	52
		2	11	5
		3	30	13
	Total	135	70	205
Total	3_2C1_L	1	96	54
		2	14	8
		3	34	16
	Total	144	78	222

General Trends: Patterns in Yes/No Responses

The majority of responses to the main question are "No" (144 out of 222), indicating that imputation methods and estimation techniques employing sound statistical practices are not consistently in place. Level L=1 (schools) contributes the highest number of "No" responses (96 out of 144), reflecting significant gaps in statistical techniques at the school level. L=3 (Ministry) follows with 34 "No" responses, while L=2 (Dzongkhag) reports fewer "No" responses (14). "Yes" responses (78 out of 222) are concentrated at L=1 (54) and L=3 (16), showing some degree of implementation at these levels.

Item-by-Item Analysis

Among "No" responses, L=1 leads with 96, highlighting challenges in the use of sound statistical techniques for imputation and estimation at the school level. L=3 contributes 34 "No" responses, indicating similar gaps at the ministry level. Conversely, "Yes" responses are strongest at L=1 (54), suggesting that some schools employ statistical techniques. L=3 shows moderate compliance with 16 "Yes" responses, while L=2 has limited activity, with 8 "Yes" and 14 "No" responses. This variability underscores the need for consistent application of sound statistical methods across operational levels.

Key Contradictions

Contradictions arise where "No" responses are paired with operational activity, particularly at L=1 and L=3, where sound statistical methods are crucial for maintaining data quality. The relatively balanced responses at L=2 suggest inconsistencies in the understanding or application of imputation and estimation techniques. These contradictions point to the need for clear guidelines and enhanced training in statistical methods.

Recommendations

Efforts should focus on establishing robust imputation and estimation frameworks, particularly at L=1 and L=3, through the use of standardized statistical techniques such as sampling weights and calibration weights. Collaboration between GovTech and PPD should aim to provide training and resources to operational staff to improve their understanding and application of these methods. Automated tools and software for statistical modeling should be introduced to ensure consistency. Routine evaluations and feedback mechanisms should be implemented to monitor progress and address gaps in the application of sound statistical techniques.

3_2C2. Are imputation and estimation methods appropriate for dealing with missing, valid or inconsistent data from administrative records, population censuses, or schools, and assessments of student achievement?

Table 1.41

3_2C2 L * 3_2C2 * ID Crosstabulation

Count					
ID			3_2C2		Total
			0	1	
2	3_2C2_L	3		1	1
	Total			1	1
3	3_2C2_L	1	3	3	6
		2	3	3	6
		3	2	3	5
	Total		8	9	17
4	3_2C2_L	1	70	85	155
		2	6	5	11
		3	28	18	46
	Total		104	108	212
Total	3_2C2_L	1	73	88	161
		2	9	8	17
		3	30	22	52
	Total		112	118	230

General Trends: Patterns in Yes/No Responses

The responses are relatively balanced, with a slight majority of "Yes" (118 out of 230), indicating that imputation and estimation methods are considered appropriate for dealing with missing, invalid, or inconsistent data in some cases. Level L=1 (schools) contributes the highest number of "Yes" responses (88 out of 118), reflecting active engagement at the school level in applying these methods. L=3 (Ministry) follows with 22 "Yes" responses, while L=2 (Dzongkhag) contributes only 8 "Yes" responses, suggesting limited implementation at this level. "No" responses (112 out of 230) are also concentrated at L=1 (73), highlighting areas where methods may need refinement or greater adoption.

Item-by-Item Analysis

Among "No" responses, L=1 leads with 73, indicating challenges at the school level in applying appropriate imputation and estimation methods. L=3 contributes 30 "No" responses, reflecting similar gaps at the ministry level. Conversely, "Yes" responses are strongest at L=1 (88), showing that a significant number of schools recognize and implement suitable methods. L=3 shows moderate compliance with 22 "Yes" responses, while L=2 has limited activity, with 8 "Yes" and 9 "No" responses. The data highlights inconsistencies in the understanding and application of imputation and estimation techniques across operational levels.

Key Contradictions

Contradictions arise where "No" responses are paired with operational activity, particularly at L=1 and L=3, where effective imputation and estimation methods are essential for ensuring data accuracy. The balanced responses at L=2 suggest variability in implementation or understanding of these methods. These contradictions point to the need for clearer guidelines and enhanced training in statistical techniques for addressing missing or inconsistent data.

Recommendations

Efforts should focus on establishing standardized imputation and estimation protocols, particularly at L=1 and L=3, to address data issues effectively. Collaboration between GovTech and PPD should aim to provide training and resources to enhance operational understanding of these methods. Automated tools and software for data imputation and consistency checks should be introduced to ensure uniformity and accuracy. Routine evaluations and feedback mechanisms can help monitor progress and address gaps in the adoption of these statistical techniques.

3 2C3. Is statistical projection (including population projections) computed according to sound methodological procedures?

Table 1.42

3 2C3 L * 3 2C3 * ID Crosstabulation

Count					
ID		3 2C3			Total
		0		1	
2	3 2C3 L	3		1	1
	Total			1	1
3	3 2C3 L	1	1	2	3
		2	4	3	7
		3	3	4	7
	Total	8	9	17	
4	3 2C3 L	1	83	68	151
		2	3	8	11
		3	32	16	48
	Total	118	92	210	
Total	3 2C3 L	1	84	70	154
		2	7	11	18
		3	35	21	56
	Total	126	102	228	

General Trends: Patterns in Yes/No Responses

The majority of responses to the main question are "No" (126 out of 228), indicating that statistical projections, including population projections, are not consistently computed according to sound methodological procedures. Level L=1 (schools) contributes the highest number of "No" responses (84 out of 126), reflecting significant gaps in methodological rigor at the school level. L=3 (Ministry) follows with 35 "No" responses, while L=2 (Dzongkhag) reports fewer "No" responses (7). "Yes" responses (102 out of 228) are concentrated at L=1 (70) and L=3 (21), showing partial adoption of sound methodological practices at these levels.

Item-by-Item Analysis

Among "No" responses, L=1 leads with 84, indicating challenges in the application of sound statistical projection methods at the school level. L=3 contributes 35 "No" responses, reflecting similar gaps at the ministry level, while L=2 records minimal "No" responses (7). Conversely, "Yes" responses are strongest at L=1 (70), suggesting that some schools engage in methodological practices for projections. L=3 shows moderate compliance with 21 "Yes" responses, while L=2 has limited activity, with only 11 "Yes" responses. This variability highlights inconsistencies in the application of sound methodologies for projections across operational levels.

Key Contradictions

Contradictions arise where "No" responses are paired with operational activity, particularly at L=1 and L=3, where rigorous statistical projection methods are critical. The relatively balanced responses at L=2 suggest variability in the understanding or application of projection methodologies. These contradictions emphasize the need for clearer guidelines and enhanced training in sound statistical procedures.

Recommendations

Efforts should focus on establishing standardized methodologies for statistical projections, particularly at L=1 and L=3, to improve the accuracy and reliability of projections. Collaboration between GovTech and PPD should aim to provide training and resources to enhance the capacity for applying sound projection techniques. Automated tools and software for statistical modeling should be introduced to ensure consistency. Regular evaluations and feedback mechanisms should monitor progress and address gaps in the adoption of sound methodological procedures.

3_2C4. Where compensation for missing data is not feasible (e.g., data not collected from private schools), is reason for missing data described?

Table 1.43

3_2C4_L * 3_2C4 * ID Crosstabulation

Count					
ID			3_2C4		Total
			0	1	
2	3_2C4_L	1		1	1
	Total			1	1
3	3_2C4_L	1	1	1	2
		2	5	1	6
		3	5	3	8
	Total		11	5	16
4	3_2C4_L	1	84	56	140
		2	2	5	7
		3	37	22	59
	Total		123	83	206
Total	3_2C4_L	1	85	58	143
		2	7	6	13
		3	42	25	67
	Total		134	89	223

General Trends: Patterns in Yes/No Responses

The majority of responses to the main question are "No" (134 out of 223), indicating that reasons for missing data are not consistently described when compensation is not feasible. Level L=1 (schools) contributes the highest number of "No" responses (85 out of 134), reflecting significant gaps in providing explanations for missing data at the school level. L=3 (Ministry) follows with 42 "No" responses, while L=2 (Dzongkhag) reports fewer "No" responses (7). "Yes" responses (89 out of 223) are concentrated at L=1 (58) and L=3 (25), indicating partial adherence at these levels.

Item-by-Item Analysis

Among "No" responses, L=1 leads with 85, indicating challenges in providing reasons for missing data when compensation is not feasible at the school level. L=3 contributes 42 "No" responses, reflecting similar gaps at the ministry level. Conversely, "Yes" responses are strongest at L=1 (58), showing that some schools document reasons for missing data. L=3 shows moderate compliance with 25 "Yes" responses, while L=2 exhibits limited engagement, with 6 "Yes" and 7 "No" responses. This variability highlights inconsistencies in handling missing data across operational levels.

Key Contradictions

Contradictions arise where "No" responses are paired with operational activity, particularly at L=1 and L=3, where transparency in explaining missing data is essential. The balanced responses at L=2 suggest variability in understanding or implementation of protocols for documenting missing data. These contradictions emphasize the need for clearer guidelines and enhanced training on reporting standards for missing data.

Recommendations

Efforts should focus on establishing clear protocols for documenting and explaining missing data, particularly at L=1 and L=3. Collaboration between GovTech and PPD should aim to provide training and resources to enhance understanding and implementation of these protocols. Automated tools for tracking and reporting missing data can be introduced to ensure consistency. Routine evaluations and feedback mechanisms should monitor progress and address gaps in adherence to missing data documentation standards.

3_2C5. Are problems regarding non-responses, recall errors, reporting errors, respondents' effects, interviewer effects, and inappropriate instrument design addressed?

Table 1.44

3_2C5 L * 3_2C5 * ID Crosstabulation

Count					
ID		3_2C5			Total
		0	1		
2	3_2C5_L	3		1	1
	Total			1	1
3	3_2C5_L	1	1	2	3
		2	4	1	5
		3	3	5	8
	Total	8	8	16	
4	3_2C5_L	1	66	67	133
		2	3	3	6
		3	32	40	72
	Total	101	110	211	
Total	3_2C5_L	1	67	69	136
		2	7	4	11
		3	35	46	81
	Total	109	119	228	

General Trends: Patterns

The majority of responses to the main question are "Yes" (119 out of 228), indicating that problems regarding non-responses, recall errors, reporting errors, respondent effects, interviewer effects, and

inappropriate instrument design are partially addressed. Level L=1 (schools) contributes the highest number of "Yes" responses (69 out of 119), reflecting active engagement at the school level in addressing these issues. L=3 (Ministry) follows with 46 "Yes" responses, while L=2 (Dzongkhag) reports fewer "Yes" responses (4). "No" responses (109 out of 228) are concentrated at L=1 (67) and L=3 (35), suggesting areas for further improvement at these levels.

Item-by-Item Analysis

Among "No" responses, L=1 leads with 67, indicating that a significant number of schools face challenges in effectively addressing errors and design issues. L=3 contributes 35 "No" responses, reflecting similar gaps at the ministry level, while L=2 records minimal "No" responses (7). Conversely, "Yes" responses are strongest at L=1 (69), showing that many schools are taking steps to address these issues. L=3 shows moderate compliance with 46 "Yes" responses, while L=2 exhibits minimal activity, with only 4 "Yes" and 7 "No" responses. This variability highlights inconsistencies in addressing these problems across operational levels.

Key Contradictions

Contradictions arise where "No" responses are paired with operational activity, particularly at L=1 and L=3, where effectively addressing errors and design issues is crucial for data reliability. The relatively balanced responses at L=2 suggest variability in the implementation of strategies to address these problems. These contradictions point to the need for clearer guidelines and training to ensure consistent practices across levels.

Recommendations

Efforts should focus on implementing standardized procedures to address non-responses, recall errors, reporting errors, and instrument design issues, particularly at L=1 and L=3. Collaboration between GovTech and PPD should aim to provide resources, training, and tools to enhance the capacity for identifying and mitigating these problems. Automated systems and regular audits should be introduced to ensure consistency and accuracy. Routine evaluations and feedback mechanisms can help refine strategies and improve adherence across operational levels.

3_2C6. Are adjustments made if a sizeable part of the population is not covered by sources used for regular compilation of statistics?

Table 1.45
3_2C6_L * 3_2C6 * ID Crosstabulation

ID		3_2C6		Total
		0	1	
2	3_2C6_L	3	1	1
	Total		1	1
3	3_2C6_L	1	1	3
		2	4	3
		3	3	3
	Total	8	9	17
4	3_2C6_L	1	86	50
		2	7	9
		3	33	20
	Total	126	79	205

Total	3_2C6_L	1	87	53	140
		2	11	12	23
		3	36	24	60
	Total	134	89	223	

General Trends: Patterns in Yes/No Responses

The majority of responses to the main question are "No" (134 out of 223), indicating that adjustments are not consistently made when a sizeable part of the population is not covered by sources used for regular compilation of statistics. Level L=1 (schools) contributes the highest number of "No" responses (87 out of 134), reflecting significant gaps at the school level in addressing population coverage issues. L=3 (Ministry) follows with 36 "No" responses, while L=2 (Dzongkhag) reports fewer "No" responses (11). "Yes" responses (89 out of 223) are concentrated at L=1 (53) and L=3 (24), showing partial compliance at these levels.

Item-by-Item Analysis

Among "No" responses, L=1 leads with 87, indicating that many schools face challenges in making adjustments for underrepresented populations in statistical sources. L=3 contributes 36 "No" responses, reflecting similar gaps at the ministry level. Conversely, "Yes" responses are strongest at L=1 (53), suggesting that some schools actively address these issues. L=3 shows moderate compliance with 24 "Yes" responses, while L=2 has limited engagement, with only 12 "Yes" and 11 "No" responses. This variability highlights inconsistencies in how population coverage gaps are managed across operational levels.

Key Contradictions

Contradictions arise where "No" responses are paired with operational activity, particularly at L=1 and L=3, where ensuring population coverage is critical. The relatively balanced responses at L=2 suggest variability in the understanding or implementation of strategies to address population gaps. These contradictions emphasize the need for standardized practices and enhanced training to ensure uniform approaches to population adjustments.

Recommendations

Efforts should focus on establishing clear protocols for identifying and addressing population coverage gaps, particularly at L=1 and L=3. Collaboration between GovTech and PPD should aim to provide training and resources to enhance the capacity for making necessary adjustments. Automated systems for population data tracking should be introduced to identify gaps proactively. Routine evaluations and feedback mechanisms should monitor progress and address inconsistencies across all operational levels.

3_2C7. Are revisions to statistical methodology reviewed regularly?

Table 1.46

3_2C7_L * 3_2C7 * ID Crosstabulation

Count					
ID	3_2C7			Total	
		0	1		
2	3_2C7_L	3		1	1
	Total			1	1
3	3_2C7_L	1	0	3	3

		2	4	1	5
		3	5	4	9
	Total		9	8	17
4	3_2C7_L	1	78	54	132
		2	3	5	8
		3	44	27	71
	Total		125	86	211
Total	3_2C7_L	1	78	57	135
		2	7	6	13
		3	49	32	81
	Total		134	95	229

General Trends: Patterns in Yes/No Responses

The majority of responses to the main question are "No" (134 out of 229), indicating that revisions to statistical methodology are not consistently reviewed regularly. Level L=1 (schools) contributes the highest number of "No" responses (78 out of 134), reflecting significant gaps in methodological review at the school level. L=3 (Ministry) follows with 49 "No" responses, while L=2 (Dzongkhag) reports fewer "No" responses (7). "Yes" responses (95 out of 229) are concentrated at L=1 (57) and L=3 (32), showing partial adherence to reviewing methodologies at these levels.

Item-by-Item Analysis

Among "No" responses, L=1 leads with 78, highlighting challenges in regularly reviewing statistical methodologies at the school level. L=3 contributes 49 "No" responses, reflecting similar gaps at the ministry level. Conversely, "Yes" responses are strongest at L=1 (57), suggesting that some schools actively engage in methodological reviews. L=3 shows moderate compliance with 32 "Yes" responses, while L=2 has limited engagement, with only 6 "Yes" and 7 "No" responses. This variability underscores the need for consistent practices in reviewing statistical methodologies across all operational levels.

Key Contradictions

Contradictions arise where "No" responses are paired with operational activity, particularly at L=1 and L=3, where regular review of methodologies is essential for ensuring data accuracy and relevance. The relatively balanced responses at L=2 suggest variability in the understanding or implementation of methodology review practices. These contradictions highlight the need for clear guidelines and training to standardize review practices across levels.

Recommendations

Efforts should focus on establishing routine review mechanisms for statistical methodologies, particularly at L=1 and L=3, to ensure methodological consistency and improvement. Collaboration between GovTech and PPD should aim to provide resources, training, and tools for conducting systematic reviews. Automated tools for tracking and evaluating methodology changes can be introduced to enhance efficiency. Regular evaluations and feedback mechanisms should monitor progress and address inconsistencies across operational levels.

Table 1.47
SWOT Analysis for Statistical Techniques

Strength	Weakness
<p>Engagement and Recognition at Level 1 and Level 3 There is some recognition and application of sound statistical techniques at both Level 1 (schools) and Level 3 (ministries), such as imputation, estimation, statistical projections, addressing errors, and reviewing methodologies. This indicates a foundational understanding of key statistical practices.</p> <p>At Level 1 and Level 3, there is recognition of the importance of addressing issues like population coverage gaps and documenting missing data, suggesting that schools and ministries acknowledge the need for improvements in data quality and transparency.</p> <p>Active Efforts in Addressing Key Issues Both schools and ministries demonstrate active engagement in addressing issues such as data errors, design flaws, and missing data documentation, indicating a commitment to improving data integrity. Additionally, engagement at Level 3 suggests there is potential for leadership and centralization of best practices, which could lead to improved consistency and scalability of statistical practices across levels.</p> <p>Potential for Standardization Across Levels The relatively strong engagement at Level 3 across various statistical areas provides an opportunity to standardize practices for imputation, estimation, projections, error mitigation, and addressing population coverage gaps. This standardization can be scaled and disseminated across all levels, leading to improved data quality and decision-making.</p>	<p>Challenges in Consistent Application of Statistical Methods Despite some recognition, there are significant gaps in consistently applying statistical methods across all levels. At Level 1, high "No" responses point to difficulties in fully implementing effective imputation, estimation, and projection methods due to resource constraints or lack of training.</p> <p>Inconsistent application of methodologies, error tracking, and addressing population coverage gaps at Level 1 and Level 3 may be linked to insufficient guidance or unclear processes, highlighting the need for better training and resources at these levels.</p> <p>Minimal Engagement at Level 2 (Dzongkhags) There is minimal engagement at Level 2, which undermines the integration, oversight, and coordination between schools and ministries. This creates gaps in statistical practices and can lead to inconsistencies in data reliability, affecting the quality of education statistics and decision-making.</p> <p>Resource Constraints and Insufficient Training Many of the weaknesses stem from resource constraints and insufficient training at Level 1, which hinder the consistent application of best practices and the review of statistical methodologies. This results in inconsistencies in data imputation, error tracking, and methodology reviews.</p>
Opportunities	Threats
<p>Centralization and Standardization of Best Practices Level 3 engagement provides an opportunity to centralize and standardize best practices in statistical techniques, ensuring that all levels adhere to the same standards for imputation, estimation, projections, error handling, and population coverage adjustments.</p> <p>By standardizing these practices, there is an opportunity to scale successful methods across all levels, improving the overall reliability and consistency of education data.</p> <p>Capacity Building and Training Initiatives Targeted capacity-building programs for schools and Dzongkhags can address gaps in training and ensure that statistical practices are properly understood and implemented at all levels. This would foster a more</p>	<p>Inconsistent Implementation at Level 2 The minimal engagement at Level 2 poses a threat to the overall reliability of statistical methods, including imputation, estimation, and projections. Without sufficient engagement and integration, discrepancies may arise in how data is managed across levels, leading to inaccuracies in education statistics.</p> <p>Data Integrity and Credibility Risks Inconsistent implementation of statistical practices, particularly in the documentation of missing data and addressing population coverage gaps, threatens the integrity of the collected data. This can undermine the credibility of education statistics and hinder effective policy-making and resource allocation.</p> <p>Delays in Methodology Review and Adaptation</p>

<p>uniform approach to data management and improve the overall accuracy of education statistics.</p> <p>Improvement of Data-Related Technologies and Processes Upgrading error tracking systems, imputation methodologies, and population coverage monitoring tools can improve the accuracy and efficiency of data management across all levels, enhancing the reliability of statistical outputs.</p>	<p>The significant number of "No" responses at Level 1 regarding the regular review of methodologies points to a risk that outdated or incorrect methods may continue to be used. This could affect the quality of statistical outputs and limit the usefulness of data for decision-making.</p> <p>Resource Dependence and Data Inaccuracies Over-reliance on schools without adequate support or resources from higher levels (ministries) may result in data inaccuracies, delays in implementing statistical practices, and inefficiencies in managing education statistics.</p>
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1.5 Integrity

General Standard: Education statistics contained within the system are guided by principles of integrity.

1.5.1 Professionalism

Standard: EMIS staff exercise their profession with technical independence and without outside interference that could result in the violation of the public trust in EMIS statistics and the EMIS itself.

Benchmark ⇒ Latent Emerging Established Advanced

√

Professionalism is generally maintained, with ethical guidelines, merit-based recruitment, and transparency measures in place. However, gaps in technical independence and enforcement of ethical standards may impact the system's credibility.

The EMIS system is rated Established for "Professionalism." While ethical codes, merit-based recruitment, and transparency measures support professionalism, gaps in technical independence and enforcement of confidentiality standards prevent the system from achieving an Advanced rating. Addressing these weaknesses and capitalizing on identified opportunities would enhance professionalism, improve public trust, and ensure the credibility and reliability of EMIS statistics.

Table 1.48
Items and Responses for Professionalism

Item	Statement	Response	Level
		Yes/No	1/2/3
3_3A1	Is staff protected by a code of professional ethics supported by the Ministry of Education and/or the national statistical agency?	1	3
3_3A2a	Is professionalism promoted by publishing methodological papers?	1	3
3_3A2b	Is professionalism promoted by encouraging participation in conferences and meetings with other professional groups?	1	3
3_3A3	Are research and analysis undertaken by the data-producing agency for publication subject to internal review and other processes to maintain the agency's reputation for professionalism?	1	3
3_3A4	Is the choice of source data informed solely by technical reasons?	1	3

3_3A5	Is the choice of statistical techniques informed solely by technical reasons?	0	3
3_3A6	Are decisions about dissemination informed solely by technical reasons?	1	1
3_3A7	Are the selection methods for choice of source data and statistical techniques publicly documented?	1	3
3_3A8	Is the agency producing education statistics maintaining the public trust by commenting publicly on erroneous interpretations or misuse of education statistics?	1	3
3_3A9	Does the agency seek to prevent misinterpretation or misuse of education statistics by providing explanatory materials and briefings to the public?	1	3
3_3A10	Does the education information system have a recruitment and promotion system where positions are filled according to qualifications required?	1	3
3_3A11	Is access to data restricted to EMIS staff that require the information to perform their duties?	1	3
3_3A12	Does EMIS staff review all data ready for dissemination to ensure there is not indirect disclosure of confidential data?	1	3
3_3A13	Are there mechanisms to enforce penalties against EMIS staff that disclose confidential information for other purposes?	0	3

General Trends

The table highlights a strong commitment to professionalism and ethical standards within the education management information system (EMIS). Most items indicate that professionalism is promoted through mechanisms like ethical codes, publication of methodological papers, participation in professional conferences, and internal review processes for research. Decisions about data selection, dissemination, and statistical techniques are largely informed by technical reasons, though there are gaps in ensuring full technical independence in statistical techniques and enforcement of confidentiality. The system demonstrates a focus on public trust by addressing misinterpretations and maintaining transparency. Recruitment and data access are guided by qualifications and confidentiality, but there is no mechanism for penalizing breaches of confidentiality, indicating an area for improvement.

Item-by-Item Analysis

Item 3_3A1 confirms that staff are protected by a code of professional ethics, ensuring a foundation for ethical practices. Items 3_3A2a and 3_3A2b show that professionalism is actively promoted through publications and participation in professional events. Item 3_3A3 highlights robust internal review processes to maintain professionalism in research and analysis. Items 3_3A4 and 3_3A5 indicate that while source data selection is guided solely by technical reasons, statistical techniques do not always follow this principle, reflecting a gap in technical independence. Item 3_3A6 notes that dissemination decisions are informed by technical reasons at the school level. Item 3_3A7 confirms that the selection methods for data and statistical techniques are publicly documented. Items 3_3A8 and 3_3A9 demonstrate a focus on public trust through explanatory materials and public commentary on misinterpretations. Items 3_3A10 to 3_3A12 show that recruitment processes are merit-based, access to data is restricted to essential personnel, and data ready for dissemination is reviewed to prevent confidentiality breaches. However, Item 3_3A13 highlights the absence of mechanisms to enforce penalties for breaches of confidentiality, which is a critical weakness.

Recommendations

To strengthen the system, the Ministry should prioritize full technical independence in statistical processes, ensuring that statistical techniques are selected solely on technical grounds.

Mechanisms for enforcing penalties against breaches of confidentiality should be established to uphold data security and ethical standards. Efforts to enhance professionalism should continue, including expanding opportunities for staff development through conferences and publications. Transparency should remain a key focus, with ongoing efforts to document methods publicly and address misinterpretations of statistics. Additionally, periodic training on confidentiality and ethical practices should be provided to EMIS staff to reinforce their responsibilities in data management and dissemination.

Table 1.49
SWOT Analysis for Professionalism

Strength	Weakness
The system promotes professionalism through ethical codes, publications, professional events, and internal review processes. Recruitment and promotion are merit-based, ensuring qualified personnel. Mechanisms to maintain public trust and transparency are robust, including public commentary and explanatory materials on education statistics.	Statistical techniques are not always guided solely by technical reasons, reflecting a potential gap in independence. The absence of mechanisms to penalize breaches of confidentiality poses a significant risk to data security and ethical standards.
Opportunities	Threats
There is an opportunity to enhance technical independence by refining processes for selecting statistical techniques. Establishing mechanisms to enforce penalties for breaches of confidentiality would strengthen data security. Expanding training programs and professional development opportunities could further improve staff capabilities and system effectiveness.	The lack of mechanisms to penalize confidentiality breaches may undermine public trust and data security. Inconsistent adherence to technical principles in statistical processes could reduce the credibility and reliability of the data system, impacting its utility for evidence-based decision-making.

1.5.2 Transparency

Standard: Statistical policies and practices are transparent.

Benchmark ⇒ Latent Emerging Established Advance

√

Statistical policies and practices are transparent to a reasonable degree, with efforts to disclose methodologies, confidentiality, and security measures. Some gaps remain in outreach or public awareness campaigns, particularly at the local level. The EMIS system is rated Established for "Transparency." While it demonstrates a reasonable level of openness through information disclosure and public awareness measures, gaps in comprehensive outreach and inconsistency in local engagement limit its advancement to a higher level. By addressing these weaknesses and seizing identified opportunities, the system can enhance its transparency and build greater trust among stakeholders.

Table 1.50
Items and Responses for Transparency

Item	Statement	Response	Level
		Yes/No	1/2/3
3_3B1a	Does publicly available information exist about the terms and conditions regarding how educational statistics are collected?	1	3

3_3B1b	Does publicly available information exist about the terms and conditions regarding how educational statistics are compiled?	0	3
3_3B1c	Does publicly available information exist about the terms and conditions regarding the confidentiality of individual responses?	1	1
3_3B1d	Does publicly available information exist about the terms and conditions regarding the security measures taken for storing individual data?	1	3
3_3B2	Is there information about where the education statistics agency and its products outside of its EMIS functions can be found?	1	3
3_3B3	Does awareness exist on how to access publications about the education statistics agency and its products?	1	3
3_3B4	Is there public awareness that some government agencies have access to education statistics prior to when they are publicly released?	1	3
3_3B5	Is the public aware at what point internal government access is granted during the process of data compilation?	1	3
3_3B6	Are data released to the public clearly identified as a product of the agency in charge of education statistics (e.g., by name, logo)?	1	3
3_3B7	In the case of joint publications, are the contributions of the education statistics agency clearly identified?	1	3
3_3B8	Does the education statistics agency request attribution when its statistics are used or reproduced?	1	3
3_3B9	Is there documented evidence that users of education statistics are made aware in advance of major changes in methodology, source data and statistical techniques (e.g., online circular to parents about changes in how data is collected at the school-level)?	1	3

General Trends

The education statistics agency demonstrates strong transparency and accountability practices, with most items reflecting efforts to provide publicly accessible information about its operations, products, and methodologies. There is a clear emphasis on ensuring public awareness about the availability of education statistics, internal access processes, and attribution requirements. Security measures for data storage and confidentiality are documented, though there is a notable gap in providing publicly available information about the terms and conditions for compiling statistics. Overall, the agency strives for clarity and openness, particularly at the ministry level, while incorporating public feedback and awareness.

Item-by-Item Analysis

Item 3_3B1a confirms that publicly available information exists about the terms and conditions for collecting educational statistics, but Item 3_3B1b highlights a gap in similar information for data compilation. Item 3_3B1c indicates that terms and conditions regarding the confidentiality of responses are made public at the school level, while Item 3_3B1d shows that information about security measures for data storage is accessible at the ministry level. Item 3_3B2 suggests that information about the agency and its non-EMIS functions is available, and Item 3_3B3 indicates awareness of accessing publications about the agency's products. Items 3_3B4 and 3_3B5 confirm public awareness of internal government access to education statistics and the timing of such access during data compilation. Items 3_3B6 and 3_3B7 highlight clear identification of agency contributions in standalone and joint publications, while Item 3_3B8 indicates that the agency requests attribution when its statistics are used. Lastly, Item 3_3B9 confirms that users are informed in advance about major methodological changes, enhancing transparency.

Recommendations

To address the identified gap, the agency should prioritize making terms and conditions for compiling statistics publicly available, ensuring comprehensive transparency. Strengthening communication and outreach strategies, particularly at the school level, could further enhance public understanding of data practices. Regular updates on the agency’s activities, methodologies, and new publications should be shared through multiple channels, including online platforms and public bulletins. Collaboration with stakeholders to ensure consistent awareness and attribution practices will reinforce the agency’s credibility. Periodic reviews of public feedback can help refine processes and address emerging concerns effectively.

Table 1.51
SWOT Analysis for Transparency

Strength	Weakness
he agency demonstrates strong transparency by providing information on data collection, confidentiality, and security measures. Public awareness of the agency’s operations, products, and internal access processes enhances trust and accountability. The clear attribution of agency contributions in publications reinforces its credibility.	There is a lack of publicly available information about the terms and conditions for compiling educational statistics, which creates a gap in transparency. The absence of similar outreach efforts at the school level for broader topics could limit public engagement.
Opportunities	Threats
Expanding public awareness campaigns and outreach efforts, particularly in areas like data compilation, can enhance transparency. Regular updates about methodological changes and new publications can build trust and engagement. Collaboration with stakeholders and users offers opportunities to strengthen attribution practices and increase the agency’s visibility.	Gaps in providing comprehensive information could undermine public trust in the agency’s operations. If transparency efforts are inconsistent, especially at the school or community level, stakeholders may perceive a lack of accountability, affecting the agency’s reputation. Failure to adapt to evolving expectations of transparency could diminish its standing in the broader statistical community.

1.5.3 Ethical Standards

Standard: Policies and practices in education statistics are guided by ethical standards.

Benchmark ⇒ Latent Emerging Established Advanced



Ethical standards are acknowledged and recognized but are not fully integrated into operational practices. There may be a lack of comprehensive guidelines or formal mechanisms for addressing unethical behavior. Awareness of ethics is present but requires further development. The EMIS system is rated Emerging for "Ethical Standards." While there is recognition of the importance of ethics, the absence of clear guidelines and mechanisms for addressing unethical behavior limits the system's capacity to fully uphold ethical standards. To advance to a higher level, the agency should prioritize the development of comprehensive ethical guidelines, implement staff training programs, and establish internal audits to ensure ethical practices are maintained across all levels.

Table 1.52

Items and Responses for Ethical Standards

Item	Statement	Response	Leve
		Yes/No	1/2/3
3_3C1	Are there clear guidelines for identifying what constitutes unethical behavior (e.g., the misuse of statistics, the use of public property to conduct private business, the alteration of statistics in exchange for money)?	0	3
3_3C2	Are there clear guidelines outlining correct behavior when the agency or its staff is confronted with conflicts of interest?	0	3
3_3C3	Is the reputation of the agency and its management tied to compliance of ethical standards?	1	3

General Trends

The data reveals significant gaps in the ethical framework governing the education statistics agency. While the agency’s reputation is tied to compliance with ethical standards, there are no clear guidelines addressing unethical behavior or conflicts of interest. This indicates a partial commitment to ethical practices, with an emphasis on accountability at the management level but insufficient practical measures to guide staff behavior. The lack of comprehensive ethical guidelines poses risks to the agency’s integrity and transparency.

Item-by-Item Analysis

Item 3_3C1 highlights the absence of clear guidelines for identifying and addressing unethical behavior, such as the misuse of statistics, private use of public property, or manipulation of data for monetary gain. Item 3_3C2 confirms that there are no established guidelines to address conflicts of interest, leaving staff without clear directives in situations that could compromise the agency’s credibility. However, Item 3_3C3 shows that the agency’s reputation and that of its management are tied to compliance with ethical standards, reflecting an acknowledgment of the importance of ethics in maintaining public trust.

Recommendations

To strengthen the agency’s ethical framework, it is essential to develop comprehensive guidelines that clearly define unethical behaviors and outline corrective measures. These guidelines should include specific protocols for handling conflicts of interest and provide examples to guide staff in complex situations. Training programs on ethics should be implemented to ensure all employees understand and adhere to these standards. Additionally, regular audits and evaluations of ethical practices should be conducted to identify areas for improvement and ensure compliance. Establishing a reporting mechanism for unethical conduct will further enhance accountability.

Table 1.53

SWOT Analysis for Ethical Standards

Strength	Weakness
The agency’s acknowledgment of the importance of ethical standards, as reflected in its tie between reputation and compliance, lays a strong foundation for future ethical improvements. This recognition provides a starting point for developing a robust ethical framework.	The absence of clear guidelines for addressing unethical behavior and conflicts of interest creates significant vulnerabilities. Staff lack direction in handling situations that could compromise the agency’s integrity, increasing the risk of misconduct.
Opportunities	Threats

Developing and implementing comprehensive ethical guidelines presents an opportunity to enhance the agency's credibility and trustworthiness. Training programs and internal audits can reinforce ethical compliance and build a culture of integrity.	Without clear ethical guidelines, the agency risks reputational damage from potential misconduct or public perception of a lack of accountability. Unaddressed conflicts of interest could undermine the agency's credibility and the reliability of its statistical outputs.
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1.6 Periodicity and Timelines

General Standard: The system produces data and statistics periodically in a timely manner.

1.6.1 Periodicity

Standard: The production of reports and other outputs from the data warehouse occur in accordance with cycles in the education system.

Benchmark ⇒ Latent Emerging Established Advanced

√

Data production and report generation follow regular, established cycles that align with the education system's operations, such as annual or periodic surveys. These cycles are consistent, ensuring that timely, relevant data is available for decision-making.

The EMIS system is rated Established for "Periodicity." The system demonstrates strong consistency in producing key reports and data outputs on a regular basis, aligning well with the cycles of the education system. However, there are opportunities to expand the scope of surveys and improve resource capacity at lower levels to enhance the quality and completeness of data. To reach an Advanced level, the system would need to further refine and standardize its data collection processes across all levels, ensuring that all aspects of the education system are fully captured in regular, timely reports.

Table 1.54
Items and Responses for Periodicity

Item	Statement	Response	Level
		Yes/No	1/2/3
3_4A1	Is the administrative school census conducted at least once a year?	1	3
3_4A2	Are learning achievement surveys regularly conducted according to a periodicity responding to the country monitoring needs?	1	3
3_4A3	Are financial data (e.g., expenditure, earnings, etc.) published annually (e.g., financial statements)?	1	3

General Trends

The education statistics agency demonstrates strong adherence to regular and systematic data collection and dissemination practices. Annual administrative school censuses, periodic learning achievement surveys, and financial data publication align with effective data-driven decision-making. These efforts indicate a well-organized system focused on meeting monitoring needs and ensuring accountability at the ministry level. The regularity of these activities reflects a commitment to transparency and systematic planning.

Item-by-Item Analysis

Item 3_4A1 confirms that the administrative school census is conducted annually, ensuring that up-to-date data is available for planning and policy-making. Item 3_4A2 indicates that learning achievement surveys are conducted regularly, reflecting alignment with the country’s monitoring needs and educational goals. Item 3_4A3 highlights that financial data, such as expenditure and earnings, is published annually, demonstrating a commitment to transparency and financial accountability.

Recommendations

To build on these strengths, the agency should ensure that these practices are institutionalized across all levels of the education system to maintain consistency. Expanding the scope of learning achievement surveys to include a broader range of indicators, such as student well-being and teacher performance, could provide a more holistic view of the education system. The publication of financial data should include detailed breakdowns to enhance understanding and accountability among stakeholders. Regular reviews of the census, surveys, and financial reports should be conducted to ensure alignment with emerging national and international priorities.

Table 1.55

SWOT Analysis for Periodicity

Strength	Weakness
The annual school census and regular learning achievement surveys provide a consistent and reliable data collection framework. The publication of financial data enhances transparency and fosters stakeholder trust. These practices align with global standards for monitoring and accountability.	While the system is robust at the ministry level, there may be gaps in capacity or resources at the school and Dzongkhag levels that could impact data accuracy or consistency. The focus of the current surveys may be limited to standard indicators, missing opportunities to capture broader educational insights.
Opportunities	Threats
Expanding the scope of learning achievement surveys to include additional metrics can provide more comprehensive insights into the education system’s effectiveness. Detailed financial reporting can increase stakeholder engagement and trust. Collaboration with international organizations can help refine data collection and dissemination practices.	Any lapses in conducting these activities on time or maintaining data quality could undermine the agency’s credibility. Over-reliance on existing frameworks without periodic updates may result in data that no longer meets evolving national and international needs.

1.6.2 Timeliness

Standard: Final statistics and financial statistics are both disseminated in a timely manner.

Benchmark ⇒ Latent Emerging Established Advanced



Statistics, including school census and financial data, are consistently disseminated on time. There are clear systems in place to ensure timely delivery, and stakeholders receive relevant and actionable data within established timelines, typically adhering to international standards. The EMIS system is rated Established for "Timeliness." The system demonstrates consistent and timely dissemination of school census and financial statistics, which supports decision-making and aligns with international standards. However, there are opportunities to further reduce the time lag,

improve data accessibility, and enhance user interfaces. To reach an Advanced level, the system would need to provide near-real-time data and further improve accessibility for lower administrative levels, ensuring that all stakeholders can easily access and use the data effectively.

Table 1.56
Items and Responses for Timeliness

Item	Statement	Response	Level
		Yes/No	1/2/3
3_4B1	Are final statistics derived from the administrative school census disseminated within 6 - 12 months after the start of the school year?	1	3
3_4B2	Are financial statistics (inclusive of expenditure, earnings, etc.) disseminated within 6 - 12 months of the end of the financial year?	1	3

General Trends

The data highlights the education statistics agency's efficiency in disseminating critical statistics. Both administrative school census and financial statistics are released within 6-12 months of their respective reference periods. This reflects a commitment to timely data dissemination, ensuring stakeholders have access to relevant and up-to-date information. Such practices align with global standards for data timeliness and responsiveness to user needs, particularly at the ministry level.

Item-by-Item Analysis

Item 3_4B1 confirms that final statistics derived from the administrative school census are disseminated within the stipulated time frame of 6-12 months after the start of the school year. This timely release supports evidence-based planning and decision-making in the education sector. Item 3_4B2 indicates that financial statistics, including expenditure and earnings, are also disseminated within 6-12 months of the financial year-end, ensuring transparency and accountability in financial management.

Recommendations

To enhance the efficiency and utility of these dissemination practices, the agency should explore ways to reduce the time lag further, potentially aiming for shorter dissemination periods where feasible. Efforts should also be made to ensure that the released statistics are accessible to all relevant stakeholders, including those at the school and Dzongkhag levels. Developing user-friendly reports and dashboards could improve the usability of the disseminated data. Regular evaluations of dissemination practices should be conducted to identify areas for improvement and align with evolving stakeholder expectations.

Table 1.57
SWOT Analysis for Timeliness

Strength	Weakness
The timely dissemination of school census and financial statistics ensures stakeholders have access to relevant and actionable data. This practice aligns with international standards, enhancing the agency's credibility and effectiveness.	The current dissemination framework may not adequately address accessibility challenges for stakeholders at lower administrative levels, such as schools and Dzongkhags. The focus on meeting the 6-12 month timeline may leave little room for enhancing the presentation and usability of data.
Opportunities	Threats
By reducing the time lag further, the agency can provide more real-time insights for decision-making.	Delays or inconsistencies in meeting dissemination timelines could undermine stakeholder trust. Failure to

Developing accessible formats and user-friendly interfaces for disseminated statistics can increase stakeholder engagement and utility. Collaboration with technology providers can streamline dissemination processes and improve efficiency.	adapt dissemination practices to emerging technologies or user expectations could result in reduced relevance and stakeholder satisfaction over time.
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1.7 Overall Benchmark

The overall benchmark for Policy Area 3: Quality Data is classified as *Established*, determined by averaging the benchmarks of its major factors. According to the scale, a system at the *Established* level has most of the mechanisms necessary to collect, save, and produce timely, high-quality information for decision-making. However, additional measures are needed to ensure complete accuracy, security, and timeliness. This classification reflects that foundational elements such as methodological soundness, accuracy and reliability, integrity, and periodicity and timeliness are well-developed and functional, enabling the production of largely reliable and useful data. While significant progress has been made, the system has not yet reached the *Advanced* level, where all necessary mechanisms are fully established to ensure the consistent collection, secure storage, and accurate utilization of high-quality and timely information. To achieve this level, it is recommended to carefully implement the recommendations outlined in this chapter. By addressing these areas for improvement, the system can transition to the *Advanced* level, ensuring it consistently supports effective and informed decision-making processes.

1.8 Conclusion

Data quality is a multifaceted construct that is influenced by several critical factors, each of which plays a vital role in ensuring that data serves as a reliable foundation for decision-making. These factors were operationalized through specific items that provided measurable indicators of their performance. The analyses conducted were comprehensive, encompassing a review of general trends, detailed item-by-item evaluations, and identification of key contradictions or inconsistencies. These analyses were further enriched by actionable recommendations and strategic SWOT analyses, offering insights into strengths, weaknesses, opportunities, and threats related to each factor.

To provide a structured framework for interpretation, each factor was benchmarked using a four-level performance scale: Latent, Emerging, Established, and Advanced. The “Advanced” level represents the highest standard of performance, signifying full alignment with the defined criteria for optimal data quality. This benchmarking not only highlights the current status of each factor but also provides a clear pathway for improvement, guiding stakeholders toward targeted enhancements.

Moving forward, stakeholders of the EMIS are strongly encouraged to use these benchmarks as a reference point to assess the current state of data quality comprehensively. By identifying areas requiring improvement and prioritizing interventions, they can strategically address gaps and strengthen the enabling environment for high-quality data. These efforts will ultimately enhance the EMIS’s capacity to support evidence-based decision-making and contribute to the broader goals of equity, efficiency, and educational excellence.

Bibliography

- Abdul-Hamid, H. (2017). *Data for learning: Building a smart education data system*. World Bank Group. <https://documents1.worldbank.org/curated/en/444461505806849250/pdf/119805-PUB-PUBLIC-DOCDATE-10-6-17.pdf>
- BCSEA. (2021). 2021 examination highlights. <https://www.bcsea.bt/>
- Begimkulov, E., & Darr, D. (2023). Scaling strategies and mechanisms in small and medium enterprises in the agri-food sector: A systemic literature review. *Front. Sustain. Food Syst.* 7. <https://doi.org/10.3389/fsufs.2023.1169948>
- Doval, E. (2019). Risk management process in projects. *Review of General Management*, 30(2), 97-113. <http://www.managementgeneral.ro/pdf/2-2019-6.pdf>
- Druk Gyalpo's Institutes (n.d). Motherboard. <https://rigpa.pangbisa.com/>
- Education Monitoring Division. (2022). *School performance management system: Operational guidelines*. https://www.dungtsecs.edu.bt/SPMS_OG_updated_08.03.22.pdf
- Fafard, P., & Hoffman, S.J. (2020). Rethinking knowledge translation for public health policy. *Evidence & Policy*, 16(1), 165-175. <https://bristoluniversitypressdigital.com/view/journals/evp/16/1/article-p165.xml>
- Fiddicke, U., Pack, L.K., Tolonen, H., Sepai, O., Lopez, M.E., Castano, A., Schoeters, G., Gehring-Kolossa, M. (2021). A phased approach for preparation and organization of human biomonitoring studies. *International Journal of Hygiene and Environmental Health*, 232(). <https://www.sciencedirect.com/science/article/pii/S1438463920306301?via%3Dihub>
- Fullan, M. (2016). *The new meaning of educational change* (5th ed.). Routledge
- Gargani, J., & McLean, R. (2017). Scaling Science. *Stanford Social Innovation Review*, 15(4), 34–39. <https://doi.org/10.48558/CX49-R467>
- Global Partnership for Education. (2019). *Meeting the data challenge in education*. <https://www.globalpartnership.org/node/document/download?file=document/file/2019-07-15-Meeting-the-data-challenge-in-education.pdf>
- Hall, G.E. & Hord, M.S. (2020). *Implementing change: Patterns, principles, and potholes* (5th ed.). Pearson Education, Inc.
- IRDC. (n.d.). Guide to integrating gender in your project. <https://idrc-crدي.ca/en/kix-call-proposals-knowledge-and-innovation-strengthened-education-data-systems-and-data-use>

- Kositsky, M.R. (2023). Education statistics: Facts about American schools.
<https://www.edweek.org/leadership/education-statistics-facts-about-american-schools/2019/01>
- Lavis, J.N., Robertson, D., Woodside, J. M., McLeod, C.B., Ableson, J. (2003). How can research organizations more effectively transfer research knowledge to decision makers? *The Milbank Quarterly*, 81(2), 221-248. <https://pubmed.ncbi.nlm.nih.gov/12841049/>
- Management System International. (2016). *Scaling up—from vision to large-scale change: A management framework for practitioners* (3rd ed.). Management Systems International.
- Martin, P.P., Apgar, M., & Hernandez, K. (2019). *Adaptive management in SDC: Challenges and opportunities*. Swiss Agency for Development and Cooperation SDC.
- McLean, R. & Gargani, J. (2019). *Scaling impact: Innovation for the public good*. Routledge.
- Ministry of Education and Skills Development. (n.d). EMIS portal.
<https://portal.education.gov.bt/>
- Ministry of Education and Skills Development. (n.d). Royal Kasha on Education Reform.
<http://www.education.gov.bt/?p=8297>
- Ministry of Education. (2014). Bhutan education blueprint 2014-2024: Rethinking education.
<http://www.education.gov.bt/wp-content/downloads/publications/publication/Bhutan-Education-Blueprint-2014-2024.pdf>
- Ministry of Education. (2019). iShering-2: Education ICT master plan 2019-2023.
<http://www.education.gov.bt/wp-content/uploads/2021/09/iSherig-2-Education-ICT-MNasterplan-2019-2023.pdf>
- Ministry of Education. (2020). Bhutan professional standards for teachers.
<http://www.education.gov.bt/wp-content/uploads/2021/09/BPST.pdf>
- National Forum on Education Statistics. (2021). *Forum Guide to Strategies for Education Data Collection and Reporting* (NFES 2021013). U.S. Department of Education. Washington, DC: National Center for Education Statistics.
<https://files.eric.ed.gov/fulltext/ED611949.pdf>
- National Statistics Bureau of Bhutan. (2018). 2017 population and housing census of Bhutan.
<https://www.nsb.gov.bt/publications/census-report/>
- National Statistics Bureau. (2020). 12 five year plan: 1 November 2018- 31 October 2023.
<https://www.nsb.gov.bt/12th-five-year-plan>
- Office of the Prime Minister and Cabinet. (2023). Flagship Programs.
https://www.pmo.gov.bt/?stm_service=flagship-programs#1591395806422-2335c4b3-028a

- Palden, T. (2020, 18 December). His Majesty grants kashos to reform civil service and education system. <https://kuenselonline.com/his-majesty-grants-kashos-to-reform-civil-service-and-education-system/>
- Panel on Research Ethics. (2022). Tri-council policy statement: Ethical conduct for research involving humans-TCTS 2 (2022). https://ethics.gc.ca/eng/policy-politique_tcps2-eptc2_2018.html
- Policy and Planning Division. (2022). *Annual education statistics* (34th ed.). <http://www.education.gov.bt/wp-content/uploads/2023/04/AES-2022-revised-1.pdf>
- Poudel, K.Y. (2022, December 22). EMIS problems delay school results across Bhutan. *Kuensel*. <https://kuenselonline.com/emis-problems-delay-school-results-across-bhutan/>
- Renard, Y. (2004). *Guidelines for stakeholder identification and analysis: A manual for Caribbean natural resource managers and planners*. Caribbean Natural Resources Institute. <https://web.archive.org/web/20131006213155/http://www.canari.org/Guidelines5.pdf>
- Rogers, P. (2014). Theory of change: Methodological briefs, impact evaluation No. 2. UNICEF. https://www.unicef-irc.org/publications/pdf/brief_2_theoryofchange_eng.pdf
- Roy, A., & Marie, A. (2005). *Knowledge translation: Basic theories, approaches, and applications*. <https://idl-bnc-idrc.dspacedirect.org/handle/10625/3193>
- Social Sciences and Humanities Research Council. (2019). *Guidelines for effective knowledge mobilization*. https://www.torontomu.ca/content/dam/research/documents/2023-04-06_Intro-to-Knowledge-Mobilization-Strategies-and-Tools.pdf
- UK Research and Innovation. (2018). *Promoting fair and equitable research partnerships to respond to global challenges*. https://rethinkingresearchpartnerships.files.wordpress.com/2018/10/fair-and-equitable-partnerships_research-report-public.pdf
- UNESCO. (2018). Re-orienting education management information systems (EMIS) towards inclusive and equitable quality education and lifelong learning. https://www.openemis.org/wp-content/uploads/2018/05/UNESCO_Re-orienting_Education_Management_Information_Systems_EMIS_towards_inclusive_and_equitable_quality_education_and_lifelong_learning_2018_en.pdf
- UNESCO. (2019). Education management information system. <https://emis.uis.unesco.org/>
- UNESCO. (2021). Modernizing education management with EMIS: Building back stronger from the COVID-19 pandemic. https://unesdoc.unesco.org/ark:/48223/pf0000382825_eng

- UNGEI. (2010). *Equity and inclusion in education: A guide to support education sector plan preparation, revision, and appraisal*.
<https://www.globalpartnership.org/sites/default/files/2010-04-GPE-Equity-and-Inclusion-Guide.pdf>
- UNICEF. (2019). *Gender toolkit: Integrating gender in programming*. UNICEF Regional Office for Europe and Central Asia. <https://www.unicef.org/eca/media/15101/file>
- United Nations. (n.d.). Goals 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. <https://sdgs.un.org/goals/goal4>
- United States Census. (2021). Quick facts: United States.
<https://www.census.gov/quickfacts/fact/table/US/HSD410221>
- Wiilims, B.K., Szaro, R.C., & Shapiro, D.C. (2009). *Adaptive management: The U.S department of the interior technical guide*. Adaptive Management Working Group, U.S. Department of the Interior. Washington, DC. <https://www.doi.gov/sites/doi.gov/files/uploads/TechGuide-WebOptimized-2.pdf>
- World Bank Group. (2011). *Improving information systems for planning and policy dialogue: The SABER EMIS assessment tool*.
http://wbgfiles.worldbank.org/documents/hdn/ed/saber/supporting_doc/background/ems/saberemis.pdf
- World Bank Group. (2015). *World Bank group gender strategy (FY16-23): Gender equality, poverty reduction and inclusive growth*. <http://hdl.handle.net/10986/23425>
- World Bank Group. *Improving information systems for planning and policy dialogue: The SABER EMIS assessment tool*.
http://wbgfiles.worldbank.org/documents/hdn/ed/saber/supporting_doc/background/ems/saberemis.pdf
- WSDOT. (2018). *Project risk management guide*.
<https://www.wsdot.wa.gov/publications/fulltext/cevp/projectriskmanagement.pdf>
- Wyk, C. van & Crouch, L. (2020). *Efficiency and effectiveness in choosing and using an EMIS: Guidelines for data management and functionality in EMIS*. UNESCO Institute for Statistics. <https://emis.uis.unesco.org/wp-content/uploads/sites/5/2020/09/EMIS-Buyers-Guide-EN-fin-WEB.pdf>

Annexure 1 Settings for EMIS Situational Analysis Study

1.1 Introduction

This annexure provides a comprehensive overview of the processes undertaken in conducting the situational study of the Education Management Information System (EMIS) and the Motherboard platform in Bhutan. It establishes the context for the study and details the foundational aspects and methodologies that guided the research.

The annexure begins by introducing the MIEMIS project, outlining its problem statement, research questions, and specific objectives, which serve as the basis for the situational study. It then describes the objectives of the situational study and reviews the relevant literature that informs the research. The theoretical framework and benchmark scale used for evaluation are introduced, along with the sampling process for participant selection. The chapter also discusses using the SABER-EMIS tool, its administration, data collection via Google Forms, and subsequent analysis using SPSS. Additionally, the four policy areas central to the study—Enabling Environment, System Soundness, Quality Data, and Utilization for Decision-Making—are presented as the framework for evaluation. The chapter concludes with an outline of the report's structure, providing a roadmap for navigating the findings and analyses in the subsequent chapters.

1.2 MIEMIS Problem Statement

Bhutan's modern education system has made significant progress in student enrollment and school infrastructure, but challenges persist in the quality of learning outcomes (BCSEA, 2021; Policy and Planning Division, 2022). To address these challenges, Bhutan uses education data to monitor student performance and inform evidence-based policies and interventions. It collects and manages education data using an Education Management and Information System (EMIS).

EMIS is expected to serve as a comprehensive system that collects, manages, and analyzes education-related data, enabling informed decision-making and monitoring of the education system (World Bank Group, 2011; Abdul-Hamid, 2017; Wyk & Crouch, 2020). Bhutan endeavors to derive similar benefits (Policy and Planning Division, 2022). However, challenges persist in the EMIS of Bhutan (Ministry of Education, n.d.). For instance, Poudel (2022) reported in Kuensel that EMIS problems delay school results across Bhutan.

Bhutan also has a homegrown data system called Motherboard, which allows for formative assessments, qualitative feedback, narrative reports, and more than just quantitative data. DGI uses the Bhutan Baccalaureate in 23 schools, with plans to expand to all schools in the future (Prime Minister's Office, 2021), showing the system's potential for nationwide implementation, indicating that EMIS and Motherboard should interoperate seamlessly in Bhutan's education system, pointing the need for further research. However, Motherboard has not been evaluated for its strengths and weaknesses; it was a decade since the EMIS was assessed. This situational analysis study explores

the usefulness and adequacy of the features of Motherboard and EMIS to understand how much they leverage teaching and learning through quality data. The situational analysis study also examines how EMIS and Motherboard address gender equality, equity, and inclusion (GEI) issues and their combined potential to address GEI concerns.

EMIS and Motherboard have different data focuses. EMIS data is primarily quantitative, while Motherboard data is mainly qualitative. While their combined data can provide more fine-grained information to address equity and inclusion concerns, these two systems have yet to be integrated. However, this situational analysis study explores the overall feasibility of the integration, including a small-scale pilot integration of the two in 22 Bhutan Baccalaureate schools where Motherboard is used.

Bhutan's policy priorities and enabling environment support the development of EMIS (Office of the Prime Minister and Cabinet, 2023; Ministry of Education, 2014). The ICT infrastructure in Bhutan creates a favorable environment for EMIS implementation (National Statistics Bureau, 2018; Policy and Planning Division, 2022). Furthermore, the Bhutan Professional Standards for Teachers mandate using ICT resources in teaching (Ministry of Education, 2019). These factors provide a strong foundation for advancing EMIS and the Motherboard in Bhutan. Hence, this situational analysis study explores areas enhancing the use of the EMIS and the Motherboard to address the challenges Bhutan faces in leveraging data-driven decision-making and policy interventions.

1.3 MIEMIS Objectives

The overarching objective of MIEMIS is to advance data systems and data utilization in Bhutan's education system. This objective will be achieved through the following specific objectives:

- (a) Generate evidence-based insights on scaling EMIS and the Motherboard.

The project aims to conduct thorough research and experimentation to identify and implement the merged version of EMIS and Motherboard, effectively addressing challenges related to data systems and data utilization in education. Through the collection and analysis of data on the impact of these systems, the project will generate evidence-based interventions to tackle the challenges and establish strategies for scaling the systems for broader implementation.

- (b) Enhance stakeholder capacity building for knowledge utilization and EMIS and Motherboard.

The project will prioritize building the capacities of key stakeholders, including educators, policymakers, administrators, researchers, and parents/community. Through targeted training, workshops, and collaborative learning opportunities, stakeholders will be equipped with the necessary skills and knowledge to effectively understand, adopt, and utilize the EMIS and the Motherboard in data systems and data use within education systems. The project will also provide research inputs to the technical team to develop a user-friendly dashboard for EMIS and Motherboard, offering intuitive visualizations and customization options.

- (c) Mobilize knowledge and evidence generated on EMIS and Motherboard for informed policy and practice.

The project will actively disseminate the evidence and insights generated from the research and experimentation. This will be achieved by developing comprehensive reports, policy briefs, and interactive platforms such as conferences and webinars. By engaging policymakers, practitioners, and researchers, the project will facilitate a knowledge-sharing and dialogue process, enabling the evidence to inform and guide improvements in policies and practices related to EMIS and Motherboard and data use in education. The project will investigate the viability of creating a dedicated website where schools can seamlessly exchange educational data, encompassing student performance and curriculum information. Additionally, leverage social media platforms to amplify data sharing, foster stakeholder engagement, and increase visibility.

- (d) Enhance stakeholder engagement and foster partnerships and collaboration for sustainable impact.

The project will actively seek partnerships and collaborations with relevant stakeholders, including educational institutions, government agencies, non-profit organizations, and technology providers. By fostering a collaborative ecosystem, the project aims to create a sustainable impact by leveraging collective expertise, resources, and networks to scale up the implementation of EMIS and Motherboard and ensure their long-term effectiveness. Also, the project will explore spaces to include educational data use with EMIS and Motherboard as a unit component in the assessment and research modules of the program offered at the colleges of education in Bhutan to develop real-time data literacy and use by pre-service and in-service student teachers.

- (e) Strengthen the capacity of EMIS to address Gender Equality and Inclusion issues effectively.

The project will endeavor to strengthen EMIS, improving its capacity to address Gender Equality and Inclusion (GEI) by enhancing its ability to collect, analyze, and utilize data. This enhancement will be designed to actively promote GEI principles and ensure the inclusion of diverse perspectives within the education sector.

1.4 MIEMIS Research Questions

- (a) How can EMIS and Motherboard be effectively adapted, scaled, and implemented to promote gender equality, equity, and inclusion in education?
- (b) What are the enabling factors, barriers, and incentives influencing the scaling of EMIS V3.0 and the Motherboard in data systems and data used for education?
- (c) How can EMIS, Motherboard, artificial intelligence, and social-media platforms effectively enhance data utilization and decision-making processes in education?
- (d) How can data use be expanded and diversified to promote public accountability while improving educational outcomes?
- (e) How can EMIS and Motherboard be interoperable and tested to ensure their suitability and impact in the Bhutanese school education system?
- (f) How can EMIS be enhanced to incorporate gender-responsive features and practices, ensuring inclusivity and addressing gender-specific needs within the education sector?

The MIEMIS project has six phases, which are to achieve its objectives and address questions. This study focuses on Phase 1, which involves conducting a situational analysis of EMIS and Motherboard.

1.5 Objective of Situational Analysis Study of EMIS and Motherboard

Phase 1 (WP5) of the MIEMIS project focuses on conducting a situational analysis study of Bhutan's existing Education Management Information System (EMIS) and the Motherboard platform. This phase aims to provide a comprehensive assessment of EMIS and Motherboard components, collect and analyze baseline data, and identify data quality and integrity issues. It also seeks to evaluate current data management practices and assess how gender-disaggregated data is integrated into decision-making processes using EMIS and Motherboard. Additionally, the analysis aims to identify gaps and challenges within both systems. These efforts are expected to generate critical insights into the current status and functionality of the systems, serving as a foundation for subsequent phases of the project.

1.6 Literature Review

This study is grounded in a comprehensive review of relevant literature, providing a strong foundation for understanding the intersection of education data, accountability, policy decisions, and the implementation of Education Management Information Systems (EMIS). The review explores the benefits and challenges of EMIS, scaling approaches, stakeholder engagement, data-use culture, gender equality, and adaptive management. It also examines the relationship between change theory and developing a culture that values data-informed decision-making.

Bhutan's education system has made notable progress since the 1950s, achieving a net enrollment rate of 93.3% for primary education, with one school per approximately 269 households (Policy and Planning Division, 2022; National Statistics Bureau, 2018). In comparison, the United States reports one school per 962 households (Kositsky, 2023; United States Census, 2021). However, despite these advancements, Bhutan faces challenges in ensuring equitable and high-quality education. For instance, its high school graduation rate is 82.0% (BCSEA, 2021), lower than the United States' 88.9% (United States Census, 2021). Addressing these challenges requires leveraging education data to inform decisions, improve outcomes, and establish robust accountability mechanisms, as seen in global practices (Global Partnership for Education, 2019; UNESCO, 2019; National Forum on Educational Statistics, 2021).

Bhutan has made significant strides in creating a supportive legal and institutional environment for EMIS through initiatives such as "Towards Digitized Bhutan" (National Statistics Bureau, 2020), "Leverage ICT for Learning" (Ministry of Education, 2014), and the "iSherig" plans (Ministry of Education, 2019). These initiatives emphasize the integration of ICT into education and establishing a conducive environment for EMIS and the Motherboard system. Additionally, widespread smartphone ownership, improved internet connectivity, and increased computer availability in schools (National Statistics Bureau, 2018; Policy and Planning Division, 2022)

create favorable conditions for EMIS implementation. The Bhutan Professional Standards for Teachers mandate using ICT as a teaching resource, further strengthening the commitment to leveraging technology for better educational outcomes and a robust EMIS ecosystem (Ministry of Education, 2019).

Bhutan's journey toward implementing EMIS began in the early 2000s and culminated in the launching of its first operational version in 2010 with the support of international partners (Ministry of Education, n.d.). Globally, EMIS is expected to function as a comprehensive system for collecting, managing, and analyzing education-related data (Abdul-Hamid, 2017; Global Partnership for Education, 2019; UNICEF, 2019; World Bank Group, 2011; Wyk & Crouch, 2020). Bhutan's EMIS is envisioned to perform similar functions, enabling data-driven decision-making to improve education outcomes (Ministry of Education, n.d.).

Key findings from the literature review are summarized in Table 1.1, which provides insights into the four policy areas: Enabling Environment, System Soundness, Quality Data, and Utilization in Decision-Making. The table is a practical resource for EMIS stakeholders, offering reference points grounded in benchmarks discussed in subsequent chapters. These insights can assist stakeholders in assessing and improving EMIS-related interventions by prioritizing areas for improvement, aligning strategies with global standards, and ensuring the effectiveness and sustainability of their actions. Additionally, Table 1.1 (see Annex 4) fosters collaboration by providing a shared understanding of critical indicators, promoting consistency in policy formulation and implementation. While not an exhaustive review of EMIS literature, the table is curated to provide foundational insights and encourage further topic exploration.

1.7 EMIS and Motherboard Situational Analysis Study

Phase 1 (WP5) of the MIEMIS project is focused on a situational analysis study of Bhutan's existing Education Management Information System (EMIS) and the Motherboard platform. Under Phase 1, a situational analysis study was carried out. The study employed the SABER-EMIS approach (see Abdul-Hamid et al., 2014) and accompanying data collection tools to comprehensively assess Bhutan's current EMIS. Concurrently, a comparative analysis was conducted to evaluate the functional capabilities of EMIS and Motherboard and determine the feasibility of seamlessly integrating these two systems. The power-influence matrix method was utilized to identify key stakeholders for participation in the baseline study.

1.7.1 Theoretical Framework for Situational Analysis Study for Benchmarking Bhutan's EMIS and Gruk Gyalpo's Institute's Motherboard

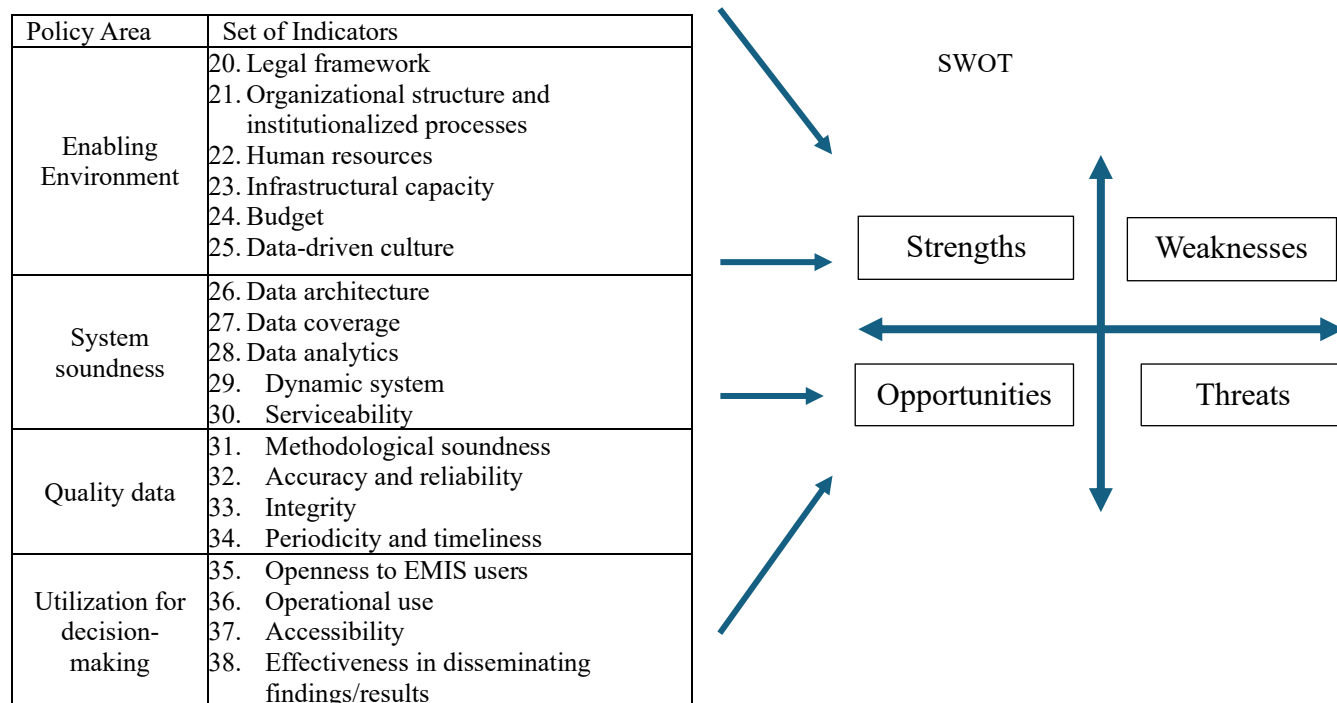
This study adopted the SABER-EMIS approach to assess the EMIS within Bhutan's school education system. As articulated by Abdul-Hamid et al. (2014), the SABER-EMIS framework provides a comprehensive assessment of education information systems across four key policy areas: (1) Enabling Environment (Assessment of intended policies about a sustainable infrastructure and human resources that can handle data collection, management, and access), (2)

System Soundness (Assessment of the degree to which the processes and structure support the components of a comprehensive information management system), (3) Quality Data (Assessment of the degree to which an EMIS system accurately collects, securely saves, and produces high-quality, timely information), and (4) Utilization for Decision-Making (Assessment of the reality of system implementation and utilization of EMIS information in decision-making).

This framework facilitates informed policy discussions on education statistics and indicators while enabling countries to effectively monitor progress across all levels of the education system – from inputs and processes to desired outcomes. Each of these four policy areas encompasses a specific set of indicators. The assessment data about these four policy areas, aggregated at the indicator level, were subjected to STWO (Strengths, Weaknesses, Opportunities, and Threats) analysis to gain specific insights (Humphrey, 2005). This SWOT analysis empowers EMIS assessors to identify areas for improvement and develop targeted action plans based on the identified indicators. Figure 1 provides a visual representation of the SABER-EMIS approach. The SABER-EMI approach is based on the International Organization for Standardization’s series ISO 9000, the Education Data Quality Assessment Framework (Ed-DQAF), and Utilization-Focused Evaluation (UFE) (Abdul-Hamid et al., 2014), indicating its validity and reliability.

Figure 1

SABER-EMIS Approach*



*For more detailed information about the policy areas and their associated factors, refer to Abdul-Hamid (2014).

1.7.2 Benchmark Scale

The benchmark levels for each indicator within a policy area are categorized into four levels: latent, emerging, established, and advanced. The advanced level represents the expected standard for each indicator and serves as the baseline for defining the other three levels. To establish the advanced level, researchers conducted a comprehensive evaluation based on general trends, item-by-item analysis, key contradictions, and recommendations, culminating in a SWOT analysis. The SWOT analysis played a pivotal role in assessing the suitability of the advanced level for each indicator.

Based on the alignment of the SWOT analysis with the advanced level, the researchers collaboratively calibrated the lower levels (latent, emerging, and established). Subsequently, these calibrated levels were presented for further consultation and endorsement by EMIS stakeholders, including technical experts and managers. Following this consultative process, the final benchmarks were established.

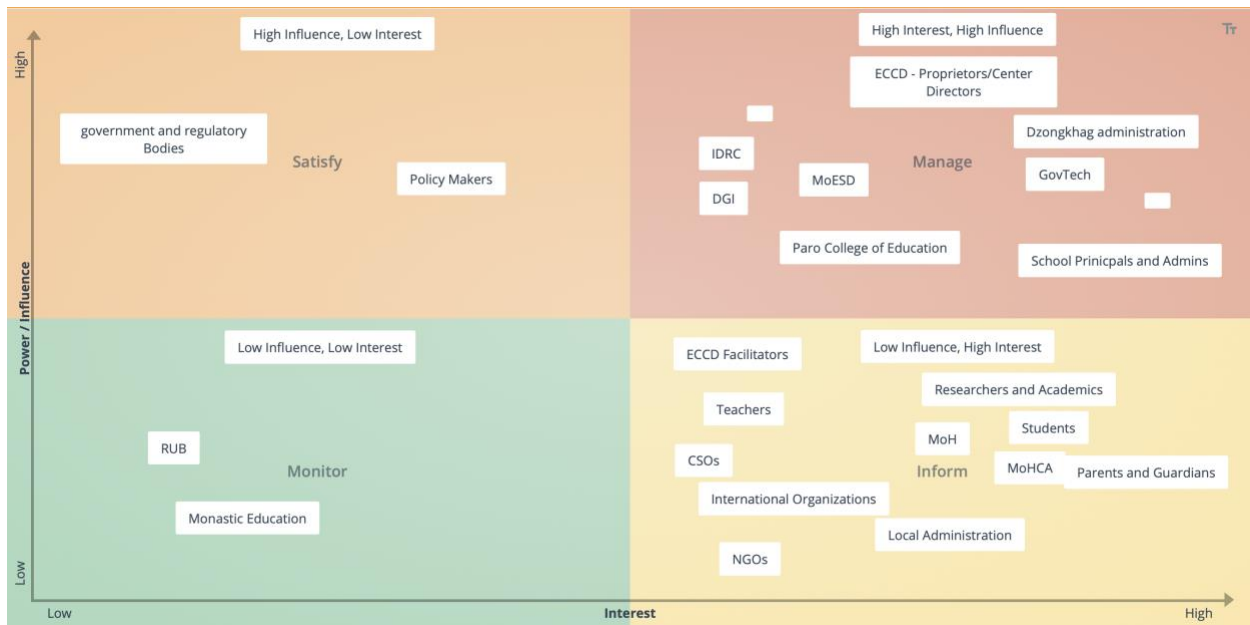
For indicators with multiple sub-indicators, benchmark levels were quantified on a numerical scale: Latent = 1, Emerging = 2, Established = 3, and Advanced = 4. The benchmark level for each main factor was calculated as the average of its sub-factor levels. Similarly, the benchmark for each of the four policy areas was determined by averaging the benchmark levels of their respective leading indicators. Finally, the overall benchmark for the EMIS was computed as the average of the benchmarks across the four policy areas. These benchmarks provided a structured framework for evaluating and monitoring EMIS development (Abdul-Hamid et al., 2014; Cicchinelli, 2016).

1.7.3 Power-Interest Matrix and Stakeholder Identification

We used the Power-Interest Matrix to identify stakeholders. We collaboratively identified potential stakeholders and mapped them to appropriate quadrants of the Power-Interest Matrix. Figure 2 presents the stakeholder map.

Figure 2

Power-Interest Matrix



As shown in Figure 2, there are different stakeholders according to their power/influence and interest relationship, whether it is data use, data source, data management, or data beneficiaries. We identified schools, GovTech, and MoESD as organizations with high influence and interest among other organizations based on their direct engagements with EMIS. Likewise, we identified DGI as an organization with high influence and interest because of its direct engagement with Motherboard. We collected data using the SABER-EMIS tool and administered it to schools, GovTech, and MoESD personnel directly involved in EMIS management. The SABER-EMIS tool was in its parts to different stakeholders depending on their relationship to the stakeholders’ experience. Appendix 3 shows the parts of the SABER-EMIS tools and the stakeholders who were administered the parts. The DGI also used its 24 schools to collect data by administering a survey questionnaire closely related to the SABER-EMIS tool.

1.7.4 Sampling Participants

There are 45 ECCD centers, 331 primary schools, 42 lower secondary schools, 57 middle secondary schools, and 93 higher secondary schools, totaling up to 568 schools, with the Ministry of Education and Skill Development at the time of collecting the baseline data for this study (Ministry of Education, 2023). We used the following formula to determine the sample size for the study:

$$n = \frac{N \cdot Z^2 \cdot p(1-p)}{(N-1)E^2 + Z^2 \cdot p(1-p)} \quad \text{Equation (1)}$$

Where:

- N=568
- Z=1.96 (for 95% confidence level)
- p=0.5 (maximum variability)
- E=0.05 (margin of error)
-

$$n = \frac{568 \cdot 1.96^2 \cdot (.5)(1-0.5)}{(568-1)0.05^2 + 1.96^2 \cdot (0.5)(1-0.5)} \quad \text{Equation (2)}$$

n = 229 schools approx

Based on Equation 2, our sample size is 229 schools. We increased this sample size by 52 schools to account for a possible non-responding school, resulting in a final sample size of 281 schools. We determined the sample sizes for different schools by multiplying the ratio of their number to the total schools by the 281 schools. Table 1.2 shows the sample sizes of different schools.

Table 1.2

Sample Sizes of Different Schools

School	Number (n)	Ratio (281/n)	Sample Size	Adjusted Ratio	Adjusted Sample Size
ECCD	525	0.50	140	0.10	28
PS	333	0.32	89	0.57	161
LSS	39	0.04	10	0.07	19
MSS	59	0.06	16	0.10	29
HSS	93	0.09	25	0.16	45
Total					282

The initial ratio was adjusted using a weighted approach with weights decided consensually among the MIEMIS team based on the school size, heterogeneity, and homogeneity. The adjusted sample size is the final sample size for the study. There are 20 Dzongkhags (aka districts) in Bhutan, each with different types of schools. Therefore, the final adjusted sample sizes were used to sample the number of schools from each Dzongkhag. With the adjusted sample in place, the within-school sample types were selected using a simple random sampling approach. Table 1.3 shows the final sample size for different schools selected from each Dzongkhag.

Table 1.3***Number of Schools Sampled from Dzongkhags***

Dzongkhag	ECCD	PS	LSS	MSS	HSS	Total
Bumthang	1	6	0	0	1	9
Chukha	1	13	0	4	2	20
Phuntsholing Throme	0	1	0	0	2	3
Dagana	1	7	1	1	2	13
Gasa	2	1	0	0	0	4
Haa	1	2	1	0	1	5
Lhuentse	1	6	1	0	1	9
Mongar	4	11	0	2	2	21
Paro	0	5	2	1	3	12
Pemagatshel	1	7	1	2	1	12
Punakha	2	5	2	1	2	13
Sjonkhar	2	6	1	2	2	13
Samdrup Jonkhar Throme	0	0	0	0	0	1
Samtse	4	11	2	1	3	21
Sarpang	1	5	0	3	2	11
Gelephu Throme	0	0	0	0	1	2
Thimphu	0	4	0	1	1	7
ThimThrome	0	6	1	3	5	15
Trashigang	1	18	3	2	3	27
Trashiyangtse	0	11	1	0	1	14
Trongsa	1	6	0	0	2	9
Tsirang	1	6	0	1	1	8
Wangdue	4	11	0	0	2	17
Zemgangang	0	12	0	0	1	14
Total	28	161	19	28	45	281

Other stakeholders who participated in the study included Dzongkhag and Thromde Education Officers (22 Officers), GovTech EMIS Officers (One Officer), and MoESD PPD (One Officer) and EMO Officials (One Officer). Their participation was based on their experience with the EMIS.

Rate of Return

The return rate of the schools and DEO/TEO was 75% and 62%, respectively. The return rates of PPD, GovTech, DSE, and EMD were 100%, respectively.

1.7.5 SABER-EMIS Tool

The SABER EMIS questionnaire (Abdul-Hamid et al., 2014) evaluated the 19 indicators outlined in Figure 1. Each indicator is further broken down into sub-indicators, each containing a set of individual items (as detailed in Table 1.4). Each item is presented as a dichotomous question, requiring a "Yes" or "No" response. Importantly, if the respondent answers "Yes" to an item, they are asked to specify the level at which that particular aspect is implemented. This study defines the relevant levels as Ministry, Dzongkhag, and School. To illustrate the format of these items, consider the following example: "Is there a law to create or establish an education management information system (EMIS) that collects, processes, and disseminates education data regularly?" This example demonstrates the structure of the items within the SABER EMIS questionnaire, highlighting the dichotomous response options and the subsequent level selection for "Yes" responses.

Table 1.4

Policy Areas and their Factors and Sub-Factors with Total Items

Policy Area	Indicator	Sub-Indicator (Number of Items)
Enabling Environment	Legal Framework	Institutionalization (4) Responsibility (2) Dynamic framework (2) Data Supply (7) Comprehensive and quality care (7) Data sharing and coordination (2) Utilization (1) Budget (2) Confidentiality (15)
	Organizational Structure and Institutional Processes	(6)
	Human Resources	Personnel (3) Professional development (11)
	Infrastructure Capacity	Data collection means (3) Database (2) Data management system (11) Data dissemination means (2)
	Budget	Personnel and professional development (4)
		Maintenance (1) Reporting (1) Physical infrastructure (1) Efficient use of resources (4)

	Data-driven culture	(2)
System Soundness	Data architecture	(11)
	Data coverage	Administrative data (4) Financial data (5) Human resources data (1) Learning outcome data (5)
	Data analytics	(5)
	Dynamic system	Quality assurance measures (4) Data requirement and considerations (3) System adaptability (1)
	Serviceability	Validity across data sources (15) Integrity of non-educational data bases (3) Archiving data (2) Services to EMIS data (1)
Quality Data	Methodological soundness	Concepts and definitions (7) Classification (3) Scope (8) Basis for recording (4)
	Accuracy and Reliability	Source data (12) Validation of source data (9) Statistical techniques (7)
	Integrity	Professionalism (13) Transparency (9) Ethical standards (3)
	Periodicity and Timeliness	Periodicity (3) Timeliness (2)
Utilization in Decision Making	Openness	EMIS stakeholders (1) User awareness (2) User capacity (3)
	Operational use	Utilization in evaluation (3) Utilization in governance (2) Utilization by school (5) Utilization by clients (2) Utilization by governance (2)
	Accessibility	Understandable data (8) Widely disseminated data (13) Platforms for utilization (3) User support (6)
	Effectiveness in Disseminating Findings	Disseminations strategy (3) Dissemination effectiveness (2)

1.7.6 SABER-EMIS Tool Administration

Several steps were taken to ensure the fair and efficient administration of the SABER-EMIS tool. Firstly, the tool was divided into 11 parts, tailored to the specific needs and roles of five participant categories: Dzongkhad Education Officers, School EMIS Managers or Principals, Policy and Planning Division Officers, GovTech Officers, and Education Monitoring Officers. Secondly, these parts were then integrated into Google Forms for online administration. Rigorous quality control measures were implemented, including cross-checking the Google Forms with the original questionnaires to eliminate typographical errors. Thirdly, a pilot test was conducted with the

MIEMIS team to identify and address any potential issues. Following this, the Google Forms were revised and finalized. Fourthly, all participants were provided comprehensive training on completing the Google Forms via Zoom. Finally, participants were invited to complete the Google Forms via email. A dedicated hotline was established to address any queries during the response period, which is set at one week.

1.7.7 Retrieving Responses from Google Forms

Responses from all 11 Google Forms were meticulously transferred to Microsoft Excel. A robust coding system was developed to streamline data management. Each question was assigned a unique single-digit code or letter, aligning with the questionnaire blueprint used to categorize questions for different stakeholder groups. The coded data was subsequently transferred to SPSS for further analysis.

1.7.8 Data Analysis with SPSS

Data cleaning was performed using frequency analysis. Subsequently, descriptive statistics, including frequencies, visualizations, and crosstabulations, were employed to analyze the cleaned data. The analysis aimed to identify general trends, conduct in-depth item-by-item and level-by-level analysis, pinpoint key contradictions, and generate actionable recommendations. A SWOT analysis was also conducted. Each of the four policy areas was dedicated to a separate chapter for a comprehensive presentation.

1.8 Four Policy Areas

All combined, the report on the four policy areas consumed over 500 pages. Therefore, the MIEMIS team chose to format independent reports for each policy area, averting reader fatigue and other disadvantages associated with voluminous reports. This format also provides space for prioritizing depth and granularity, providing readers with in-depth insights into specific indicators. This level of detail is crucial for readers seeking a comprehensive understanding of the findings. However, readers also have the flexibility to focus selectively on an indicator and its sub-indicators. The concepts of the indicators are comprehensible from their items.



ISBN: 978-99980-735-2-4