System Soundness of EMIS in Bhutan

Situational Analysis Study Report

GPE KIX
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CONTENT

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 Bhutan's Education Management Information System (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 system soundness, which includes five levers: (1) data architecture, (2) data coverage, (3) data analytics, (4) dynamic system, and (5) serviceability.

Each lever includes sub-levers 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, **System Soundness** is rated as Emerging, determined by averaging the benchmarks of its significant factors. This rating indicates:

- System Soundness is classified as *Emerging*, based on the average benchmarks of its major factors.
- A system at the *Emerging* level has basic processes and structures that do not fully support the components of an integrated system.
- Foundational elements such as data architecture, data coverage, data analytics, dynamic system functionality, and serviceability are present but remain in a basic state, lacking the necessary development for comprehensive integration and effectiveness.
- The system has not yet reached the *Established* level, where processes and structures partially support integration, or the *Advanced* level, where these elements are sound and fully support the system's components.
- To progress, it is essential to strengthen these foundational elements, ensuring they are robust, interconnected, and aligned with the objectives of an integrated system.

- This would improve overall system soundness, enhancing its functionality and serviceability.

The table below presents an overview of the ratings for the individual factors of System Soundness.

Scale (1=Latent, 2=Emerging, 3=Established, 4=Advanced)			1	2	3	4
System Soundness				X		
	Data Architecture			X		
	Data Coverage			X		
		Administrative Data			X	
		Financial Data		X		
		Human Resources Data		X		
		Learning Outcomes Data		X		
	Data Analytics			X		
	Dynamic System			X		
		Quality Assurance Measures		X		
		Data Requirements and Considerations		X		
		System Adaptability		X		
	Serviceability			X		
		Validity across Data Sources		X		
		Integration of Non-Education Databases into EMIS		X		
		Archiving Data		X		
		Services to EMIS Clients		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.

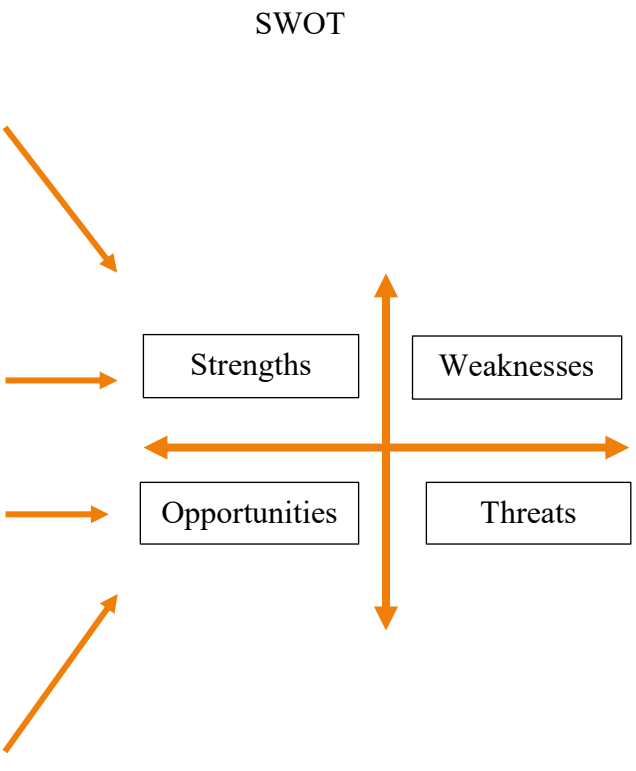
Policy Area 2: System Soundness

1.1 Introduction

The system soundness refers to the sound processes and structure of the EMIS that support the components of an integrated system. Figure 1.1 outlines five critical factors: Data architecture, data coverage, data analytics, dynamic system, and serviceability. Each factor includes specific items with variables that collectively reflect the overall health and functionality of the system. These factors are analyzed by reviewing general trends, evaluating them item by item, and making actionable recommendations to strengthen the enabling environment.

Figure 1.1
Highlighting Enabling Environment

Policy Area	Set of Factors
Enabling Environment	1. Legal framework 2. Organizational structure and institutionalized processes 3. Human resources 4. Infrastructural capacity 5. Budget 6. Data-driven culture
System soundness	7. Data architecture 8. Data coverage 9. Data analytics 10. Dynamic system 11. Serviceability
Quality data	12. Methodological soundness 13. Accuracy and reliability 14. Integrity 15. Periodicity and timeliness
Utilization for decision-making	16. Openness to EMIS users 17. Operational use 18. Accessibility 19. Effectiveness in disseminating findings/results



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 six primary components: general trends, item-by-item evaluation, key contradiction, recommendation,

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 indicators. Furthermore, each indicator was benchmarked on a scale of four levels. The levels are latent, emerging, established, and advanced. The advanced level is shows an indicator meets its standard.

The general trends analysis identify 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 delves 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 syntheses findings to identify strengths and opportunities while addressing weaknesses and threats, offering strategic insights for improvement.

The analytical approach summarizes and interprets the data exclusively using descriptive statistics. This method is 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 Data Architecture

General Standard: The data architecture is well-defined to ensure full system functionality.

Benchmark ⇒ Latent | Emerging | Established | Advance

√

An Emerging data architecture reflects initial progress toward a fully functional and secure system. However, addressing gaps in relational standards, documentation, decentralization, and capacity-building is critical for advancing to the Established level, where the architecture would achieve greater consistency, efficiency, and inclusivity across all operational tiers.

The data architecture is rated as Emerging, demonstrating a partially defined framework with strong centralized elements but significant gaps in implementation, decentralization, and technical alignment. Strengthening relational design, improving documentation, and expanding training at all operational levels will propel the system toward the Established level.

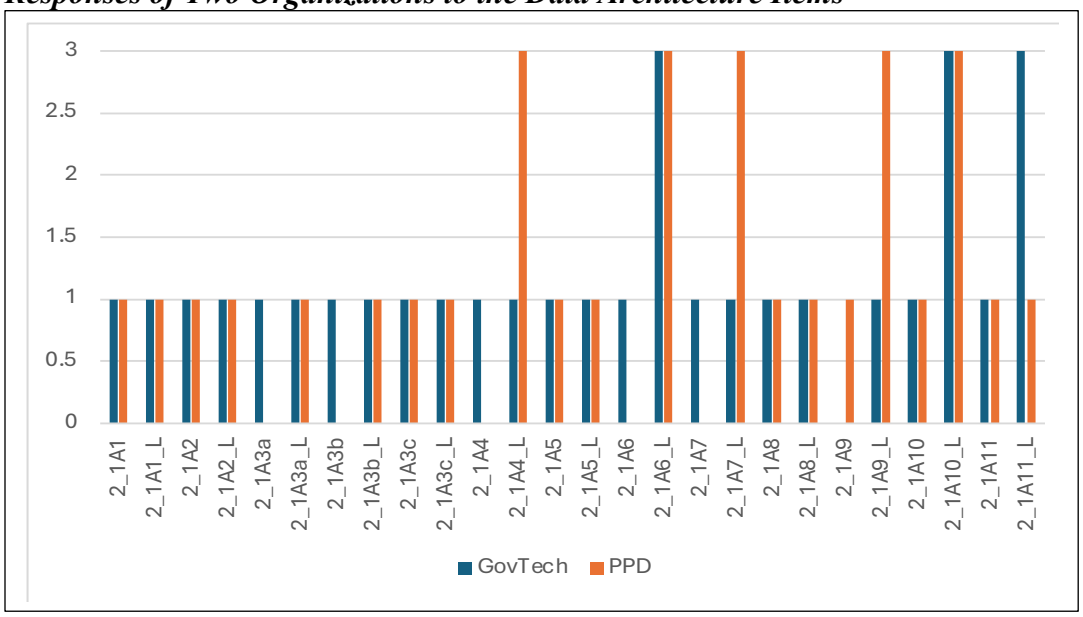
Table 1.1
Items used in Assessing Data Architecture

Item	Statement
2_1A1	Does the EMIS have a well-defined database constructed based on a wireframe (or blueprint)?
2_1A2	Do the EMIS's databases highlight the sequences and relationships among the different categories in the data?
2_1A3a	Is the database Structured according to relational standards (e.g., a database structured by tables comprised of rows/records/tuples and columns/fields/attributes)?
2_1A3b	Is the database Well-documented (e.g., organized database that stores procedures, scripts, schemas, rollouts, etc.; document-oriented database that contains encoded documents which contain a unique key and can be located by specific retrieval language or key-document lookup)?

2_1A3c	Is the database Secure (according to current security architecture standards)?
2_1A4	Does the EMIS have a table of specifications?
2_1A5	Is the data within the EMIS compatible with the table of specifications?
2_1A6	Does the EMIS have Application Programming Interfaces (APIs) that specify how software components within the database interact?
2_1A7	Is the EMIS able to produce aggregates with ease?
2_1A8	Is the system designed to ensure data security and confidentiality?
2_1A9	Have there been incidences of system violations in the last two years? (Hacking databases, phishing and cyber-attacks)
2_1A10	Is the system tested regularly to ensure data security and confidentiality and amended as needed?
2_1A11	Is hardware installation distributed adequately to ensure efficient processing of data and management of the databases?

Figure 1.2

Responses of Two Organizations to the Data Architecture Items



General Trends in EMIS Functionality Assessment

The data highlights a partially functional data architecture, with both GovTech and PPD affirming the presence of foundational elements such as a well-defined database structure (2_1A1) and secure data practices (2_1A8). However, PPD consistently denies key components like relational database structuring (2_1A3a), database documentation (2_1A3b), and APIs (2_1A6), whereas GovTech affirms them. There is agreement on security measures (2_1A3c, 2_1A10) but diverging views on the adequacy of certain operational features like producing aggregates (2_1A7) and incidences of system violations (2_1A9). The operational levels are predominantly reported at Level 3 (Ministry), with some inconsistencies in decentralization.

Item-by-Item Analysis

2_1A1 & 2_1A2: Both GovTech and PPD affirm the presence of a well-defined database and its capacity to highlight data relationships, identifying Level 1 (School) as the operational level, indicating alignment on foundational database architecture.

2_1A3a & 2_1A3b: While GovTech affirms that the database adheres to relational standards and is well-documented, PPD denies these, identifying operational activity at Level 1. This suggests inconsistencies in awareness or implementation of database design principles.

2_1A3c: Both agencies affirm that the database is secure, with activity at Level 1, reflecting shared confidence in system security.

2_1A4 & 2_1A5: GovTech affirms the presence of a table of specifications and data compatibility with it, while PPD denies the table's existence but acknowledges data compatibility, highlighting a potential gap in awareness or resource availability.

2_1A6 & 2_1A7: GovTech affirms the presence of APIs and the ability to produce aggregates, identifying Level 3 as the operational level, while PPD denies both, suggesting limited understanding or access to these features at decentralized levels.

2_1A8 & 2_1A10: Both agencies agree that the system ensures data security and confidentiality and undergoes regular testing, with Level 3 as the primary operational level, indicating strong centralized practices.

2_1A9: **GovTech** denies recent system violations, while PPD affirms their occurrence, identifying Level 3 as the affected level, highlighting potential gaps in reporting or incident management.

2_1A11: Both agencies agree on the adequacy of hardware installation, though operational levels differ, with GovTech identifying Level 3 and PPD identifying Level 1.

Key Contradictions

Key contradictions include PPD denying relational database structuring, documentation, and APIs, despite GovTech affirming them, highlighting a potential disconnect in awareness or access to technical resources. Additionally, the disagreement on recent system violations reflects inconsistent incident reporting and management across agencies.

Recommendations

To address gaps and inconsistencies, GovTech and PPD should conduct joint assessments of the database architecture to harmonize understanding and ensure the consistent implementation of relational standards, documentation practices, and APIs. Decentralizing training and capacity-building efforts is essential to empower users at Level 2 (Dzongkhag) and Level 1 (School), fostering greater system engagement and functionality across all operational levels. Additionally, reporting mechanisms for system violations must be strengthened to ensure uniformity and accountability across both agencies, improving the overall reliability and responsiveness of the EMIS.

Table 1.2

SWOT Analysis for Data Architecture

Strength	**Weakness**
Foundational database design is affirmed, with strong security practices and centralized oversight.	Gaps in relational structuring, documentation, and APIs limit system functionality and operational efficiency.
Opportunities	**Threats**
Decentralization and capacity-building at Dzongkhag and School levels can improve system adoption and alignment.	Inconsistent incident reporting and limited awareness among agencies may undermine data architecture reliability and responsiveness.

1.4 Data Coverage

General Standard: The data in the system is comprehensive and covers administrative (student & school), financial, human resources, and learning outcomes data.

1.4.1 Administrative Data

Standard: The EMIS contains administrative data at student and school levels.

Benchmark ⇒ Latent | Emerging | Established | Advance

√

The EMIS reliably collects and stores administrative data at student and school levels, covering a wide range of metrics (e.g., demographics, infrastructure, and performance). There are gaps in standardization and higher-level engagement, but the system effectively supports school-level reporting and resource allocation.

The EMIS demonstrates an "Established" capability in capturing administrative data, with significant strengths at the school level and a broad range of metrics. However, addressing gaps in higher-level engagement, standardization, and training is critical for achieving an "Advanced" rating. With strategic interventions, the EMIS can evolve into a comprehensive, multi-level educational data system.

2_2A1a. Is there essential student-level data in the EMIS, including age?

Table 1.3
2_2A1a_L * 2_2A1a * ID Crosstabulation

Count					
ID			2_2A1a		Total
			No	Yes	
1	2_2A1a_L	1	0	1	1
	Total		0	1	1
2	2_2A1a_L	1	0	1	1
	Total		0	1	1
3	2_2A1a_L	1	0	9	9
		2	0	4	4
		3	0	2	2
	Total		0	15	15
4	2_2A1a_L	1	9	179	188
		2	0	2	2
		3	3	29	32
	Total		12	210	222
Total	2_2A1a_L	1	9	190	199
		2	0	6	6
		3	3	31	34
	Total		12	227	239

General Trends

Table 3.3 highlights significant trends in the availability of essential student-level data in the EMIS at various levels of operation. Out of a total of 239 responses, 227 (95%) are "Yes," indicating a high level of agreement across groups that the EMIS contains student-level administrative data related to age. The data reveal that Level 1 (School) has the highest acknowledgment, with 190 out of 199 responses being "Yes." Similarly, Level 3 (Ministry) has 31 out of 34 "Yes" responses, reflecting robust agreement. In contrast, Level 2 (Dzongkhag) has relatively fewer responses but still maintains 100% agreement with 6 out of 6 "Yes" responses. These patterns suggest that the EMIS is widely recognized as functional and reliable in capturing student-level administrative data, particularly at the school level.

Item-by-Item Analysis

The responses highlight that the EMIS is widely acknowledged for its ability to capture student-level administrative data, particularly at the school level (Level 1), where the majority of "Yes" responses were recorded across all groups. GovTech and PPD only acknowledge data availability at Level 1, reflecting a narrow evaluation scope, while Dzongkhag recognizes data availability at all levels, albeit with fewer responses for Levels 2 (Dzongkhag) and 3 (Ministry). Schools contribute the largest number of responses, with strong agreement for Level 1 but limited acknowledgment at Levels 2 and 3. Despite high overall agreement, discrepancies in the recognition of EMIS functionality at Levels 2 and 3, particularly among GovTech and PPD, point to differences in assessment focus and communication across levels.

Key Contradictions

Several contradictions arise in the responses. Schools (ID 4) report 9 "No" responses at Level 1 (School), despite a high overall acknowledgment of EMIS functionality. Additionally, while Dzongkhag (ID 3) and schools recognize data availability at Levels 2 and 3, neither GovTech nor PPD provides responses for these levels, indicating discrepancies in scope and focus among different groups. This misalignment suggests potential gaps in communication or understanding of EMIS functionality across stakeholders.

Recommendations

To improve institutionalization and address discrepancies, it is essential to expand GovTech and PPD's evaluation scope to include Levels 2 (Dzongkhag) and 3 (Ministry), ensuring comprehensive assessment of EMIS functionality. Targeted training and workshops should be conducted to address the "No" responses at Level 1 (School) and align stakeholder understanding of EMIS capabilities. Strengthening communication and data-sharing mechanisms between levels will help bridge gaps in perceptions and reporting. Additionally, implementing regular cross-agency reviews and providing technical support at lower levels will ensure consistent and accurate data capture, fostering greater alignment and trust in the EMIS across all operational levels.

2A1b. Is there essential student-level data in the EMIS, including gender?

Table 1.4

2_2A1b_L * 2_2A1b * ID Crosstabulation

Count			
ID	2_2A1b		Total
	0	1	

1	2_2A1b_L	1	0	1	1
	Total		0	1	1
2	2_2A1b_L	0	0	1	1
	Total		0	1	1
3	2_2A1b_L	1	0	10	10
		2	0	4	4
		3	0	1	1
	Total		0	15	15
4	2_2A1b_L	1	4	184	188
		2	0	2	2
		3	2	31	33
	Total		6	217	223
Total	2_2A1b_L	0	0	1	1
		1	4	195	199
		2	0	6	6
		3	2	32	34
	Total		6	234	240

General Trends

Table 3.4 reveals that the EMIS is widely recognized as containing essential student-level data on gender, with 234 out of 240 (97.5%) responses indicating "Yes." The highest acknowledgment comes from Level 1 (School), where 195 out of 199 responses are "Yes." Level 3 (Ministry) also has strong agreement, with 32 out of 34 "Yes" responses. In contrast, Level 2 (Dzongkhag) has fewer responses but maintains 100% agreement, with all six responses being "Yes." These results reflect high confidence in the EMIS's ability to store gender-related data at multiple levels, particularly at the school level, where most data is recorded.

Item-by-Item Analysis

For GovTech (ID 1), only one response is recorded, indicating "Yes" at Level 1 (School), with no responses for other levels. PPD (ID 2) provides one response, which is "No" at Level 1, suggesting a potential data gap or misinterpretation of EMIS functionality. Dzongkhag (ID 3) shows broader acknowledgment across levels, with "Yes" responses for Level 1 (10 out of 15), Level 2 (4 out of 4), and Level 3 (1 out of 1). Schools (ID 4) dominate the responses, with 184 out of 188 "Yes" responses for Level 1, 2 out of 2 for Level 2, and 31 out of 33 for Level 3. This distribution highlights strong agreement at the school level and a generally positive assessment across all levels of operation.

Key Contradictions

The main contradiction lies in PPD's single "No" response for Level 1 (School), which conflicts with overwhelming "Yes" responses from other groups for the same level. Additionally, while schools report two "No" responses at Level 3 (Ministry), Dzongkhag and other groups consistently agree on data availability at this level. These inconsistencies may stem from differences in interpretation or varying levels of access to the EMIS database, underscoring the need for better alignment across stakeholders.

Recommendations

To address these gaps, targeted training and workshops should be conducted for PPD and schools to ensure a uniform understanding of EMIS functionality, particularly at Level 1 (School) and Level 3 (Ministry). Cross-agency collaboration should be strengthened to reconcile differences in

responses and improve consistency in evaluating data availability. Periodic reviews of EMIS data and reporting mechanisms should also be implemented to identify and resolve discrepancies promptly. By enhancing communication and standardizing evaluation criteria, the EMIS can maintain its reliability as a comprehensive repository of gender-related student data across all levels of operation.

2A1c. Is there essential student-level data in the EMIS, including ethnicity?

Table 1.5
2_2A1c * 2_2A1c_L * ID Crosstabulation

Count							
ID			2_2A1c_L				Total
			0	1	2	3	
1	2_2A1c	1		1			1
	Total			1			1
2	2_2A1c	1	1				1
	Total		1				1
3	2_2A1c	0		3	2	0	5
		1		7	1	1	9
	Total			10	3	1	14
Total	2_2A1c	0	0	3	2	0	5
		1	1	8	1	1	11
	Total		1	11	3	1	16

General Trends
The crosstabulation data indicates that the EMIS is partially recognized for containing essential student-level data related to ethinicity across different levels of operation. Out of 16 total responses, 11 (68.75%) are "Yes," while 5 (31.25%) are "No." The majority of positive responses are recorded at Level 1 (School) and Level 2 (Dzongkhag), with 8 and 1 "Yes" responses, respectively. In contrast, Level 3 (Ministry) has only 1 "Yes" response, and 2 "No" responses are recorded for Level 2, suggesting potential gaps in data availability or recognition at higher levels. These trends highlight that while the EMIS is functional at capturing ethnicity-related student data, there is less consistency in acknowledgment across levels, particularly at Levels 2 and 3.

Item-by-Item Analysis
GovTech (ID 1) and PPD (ID 2) both provide limited input, with a single "Yes" response each, exclusively for Level 1 (School), indicating minimal acknowledgment beyond the school level. Dzongkhag (ID 3) provides broader responses, with "Yes" recorded across all levels: 7 for Level 1, 1 for Level 2, and 1 for Level 3. However, Dzongkhag also reports three "No" responses for Level 2 and two for Level 3, suggesting variability in the perceived availability of EMIS data. Overall, most positive responses are concentrated at Level 1, with minimal acknowledgment at Levels 2 and 3.

Key Contradictions
The primary contradictions arise from Dzongkhag (ID 3), which reports "No" responses at both Levels 2 and 3 despite also recognizing some data availability at these levels. Additionally, while GovTech and PPD confirm the presence of gender-related data at Level 1, they provide no responses for Levels 2 and 3, creating a gap in the evaluation scope. This lack of consistency across groups and levels suggests potential differences in understanding, access, or functionality of EMIS data.

Recommendations
To address the identified gaps, targeted efforts should focus on improving data recognition and acknowledgment at Levels 2 (Dzongkhag) and 3 (Ministry). GovTech and PPD should expand their evaluations to include higher levels of operation to ensure comprehensive assessments. Training programs and workshops should be conducted for Dzongkhag stakeholders to standardize the understanding of EMIS functionality and address the contradictory responses. Additionally, implementing a centralized review mechanism for EMIS data at all levels can improve consistency and ensure more reliable data reporting across groups. Strengthening communication and data-sharing practices between agencies will further enhance institutionalization and foster greater confidence in the EMIS's capabilities.

2_2A1d. Is there essential student-level data in the EMIS, including family economic data (e.g., low-income family data, single-family household data, poverty data)?

Table 1.6
2_2A1d_L * 2_2A1d * ID Crosstabulation

Count					
ID			2_2A1d		Total
			0	1	
1	2_2A1d_L	1		1	1
	Total			1	1
2	2_2A1d_L	1		1	1
	Total			1	1
3	2_2A1d_L	1	3	3	6
		2	3	1	4
		3	2	0	2
	Total		8	4	12
4	2_2A1d_L	1	108	71	179
		2	5	4	9
		3	16	7	23
	Total		129	82	211
Total	2_2A1d_L	1	111	76	187
		2	8	5	13
		3	18	7	25
	Total		137	88	225

General Trends
The crosstabulation data indicates that the EMIS is recognized for containing family economic data, with 88 out of 225 (39.1%) responses being "Yes." Most positive responses are concentrated at Level 1 (School), where 76 out of 187 responses are "Yes," highlighting a stronger acknowledgment of data availability at this level. At Level 2 (Dzongkhag), only 5 out of 13

responses are “Yes,” while Level 3 (Ministry) shows 7 out of 25 positive responses, reflecting more limited recognition at higher levels. This pattern suggests that while family economic data is generally accessible in the EMIS, its availability is more widely recognized at the school level than at the Dzongkhag or Ministry levels.

Item-by-Item Analysis
GovTech (ID 1) and PPD (ID 2) each provide a single “Yes” response, exclusively for Level 1 (School), indicating limited input beyond this level. Dzongkhag (ID 3) shows broader acknowledgment across levels, with “Yes” responses for Level 1 (3 out of 6), Level 2 (1 out of 4), and no acknowledgment at Level 3. Schools (ID 4) contribute the majority of responses, with 71 “Yes” out of 179 for Level 1, 4 out of 9 for Level 2, and 7 out of 23 for Level 3. The strong agreement at Level 1 contrasts with the lower acknowledgment at higher levels, reflecting discrepancies in data availability or recognition.

Key Contradictions
The main contradiction lies in the varied acknowledgment of family economic data at higher levels (Levels 2 and 3). For example, Dzongkhag (ID 3) provides “No” responses for Level 3, while schools (ID 4) report some positive responses for this level. Additionally, while GovTech and PPD acknowledge data availability only at Level 1, Dzongkhag and schools recognize limited availability at higher levels, creating inconsistencies in how data functionality is evaluated across groups. These contradictions suggest differences in access or interpretation of family economic data within the EMIS.

Recommendations
To address these gaps, it is essential to enhance the consistency of data recognition across all operational levels. GovTech and PPD should expand their assessments to include Levels 2 (Dzongkhag) and 3 (Ministry) to ensure comprehensive evaluation. Training programs for Dzongkhag and school stakeholders should focus on standardizing understanding and reporting of family economic data within the EMIS. Additionally, efforts should be made to improve data integration and availability at higher levels, particularly at the Ministry level. Implementing periodic reviews and cross-agency collaboration will help reconcile contradictions and foster greater confidence in the EMIS’s ability to store and manage family economic data comprehensively.

2_2A1e. Is there essential student-level data in the EMIS, including early childhood development?

Table 1.7
2_2A1e_L * 2_2A1e * ID Crosstabulation

Count					
ID			2_2A1e		Total
			0	1	
1	2_2A1e_L	1		1	1
	Total			1	1
2	2_2A1e_L	1		1	1
	Total			1	1
3	2_2A1e_L	1	2	6	8
		2	3	1	4
		3	0	1	1

	Total		5	8	13
4	2_2A1e_L	1	69	113	182
		2	3	6	9
		3	10	17	27
	Total		82	136	218
Total	2_2A1e_L	1	71	121	192
		2	6	7	13
		3	10	18	28
	Total		87	146	233

General Trends

The crosstabulation data indicates that the EMIS contains early childhood development (ECD) data, with 146 out of 233 responses (62.7%) indicating "Yes." The highest acknowledgment is at Level 1 (School), where 121 out of 192 responses (63%) are "Yes." Level 3 (Ministry) also shows notable agreement, with 18 out of 28 responses (64.3%) being "Yes." In contrast, Level 2 (Dzongkhag) has fewer responses, with only 7 out of 13 (53.8%) indicating "Yes." These results suggest that the availability and recognition of ECD data in the EMIS are stronger at the school and ministry levels, with more limited acknowledgment at the Dzongkhag level.

Item-by-Item Analysis

GovTech (ID 1) and PPD (ID 2) each provide a single "Yes" response exclusively for Level 1 (School), reflecting limited engagement beyond this level. Dzongkhag (ID 3) reports broader acknowledgment across levels, with 6 "Yes" responses for Level 1, 1 for Level 2, and 1 for Level 3. Schools (ID 4) dominate the responses, contributing 113 "Yes" responses for Level 1, 6 for Level 2, and 17 for Level 3. While Level 1 receives the strongest recognition, the lower acknowledgment at Levels 2 and 3, particularly from Dzongkhag and schools, highlights variability in the perceived availability of ECD data across levels.

Key Contradictions

A significant contradiction is observed in the responses from Dzongkhag (ID 3), which reports "No" responses for Level 2 and Level 3 despite some acknowledgment of ECD data at these levels. Similarly, while schools (ID 4) report strong agreement at Level 1, they also contribute some "No" responses at Levels 2 and 3, creating inconsistencies. Additionally, GovTech and PPD fail to recognize ECD data availability at Levels 2 and 3, contrasting with Dzongkhag and schools' partial acknowledgment, suggesting gaps in evaluation or access to information.

Recommendations

To address these gaps, GovTech and PPD should expand their assessments to include Levels 2 (Dzongkhag) and 3 (Ministry) for a more comprehensive evaluation of ECD data availability. Targeted workshops and training sessions should be conducted for Dzongkhag and school-level stakeholders to ensure consistency in understanding and reporting ECD data within the EMIS. Efforts should also be made to improve the integration and accessibility of ECD data at the Dzongkhag and ministry levels. Regular cross-agency reviews should be implemented to identify and resolve reporting inconsistencies, ensuring more reliable and uniform data acknowledgment across all levels. By fostering collaboration and standardizing evaluation criteria, the EMIS can strengthen its role as a repository for early childhood development data.

2_2A1f. Is there essential student-level data in the EMIS, including tertiary education data (e.g., did student progress to tertiary level?)?

Table 1.8

2_2A1f_L * 2_2A1f * ID Crosstabulation

2_2A1f_L * 2_2A1f * ID Crosstabulation					
Count					
ID			2_2A1f		Total
			0	1	
1	2_2A1f_L	3	1		1
	Total		1		1
2	2_2A1f_L	1		1	1
	Total			1	1
3	2_2A1f_L	1	3	2	5
		2	4	1	5
		3	0	2	2
	Total		7	5	12
4	2_2A1f_L	1	124	50	174
		2	1	1	2
		3	24	12	36
	Total		149	63	212
Total	2_2A1f_L	1	127	53	180
		2	5	2	7
		3	25	14	39
	Total		157	69	226

General Trends

The crosstabulation data shows that the EMIS contains some tertiary education data, with 69 out of 226 responses (30.5%) indicating "Yes." The majority of positive responses come from Level 1 (School), where 53 out of 180 responses (29.4%) indicate "Yes." For Level 3 (Ministry), 14 out of 39 responses (35.9%) are "Yes," reflecting slightly better recognition at this level compared to Level 2 (Dzongkhag), where only 2 out of 7 responses (28.6%) are positive. This suggests that tertiary education data is partially available in the EMIS, but its recognition is limited across all levels, with slightly higher acknowledgment at the Ministry level.

Item-by-Item Analysis

GovTech (ID 1) provides one "Yes" response for Level 1 (School) and no acknowledgment for other levels, indicating minimal engagement beyond this level. PPD (ID 2) also contributes a single "Yes" response for Level 1, similar to GovTech. Dzongkhag (ID 3) shows broader acknowledgment with "Yes" responses for Level 1 (3 out of 5), Level 2 (1 out of 5), and Level 3 (2 out of 2), highlighting limited but distributed recognition of tertiary education data across levels. Schools (ID 4) provide the majority of responses, with 50 "Yes" responses for Level 1, 1 for Level 2, and 12 for Level 3. While Level 1 dominates the positive responses, acknowledgment at Levels 2 and 3 remains sparse, reflecting inconsistencies in data availability or recognition.

Key Contradictions

The primary contradiction lies in the varying levels of acknowledgment among groups and levels. For example, Dzongkhag (ID 3) and schools (ID 4) report some "Yes" responses at Levels 2 and 3, while GovTech and PPD focus exclusively on Level 1, suggesting gaps in scope or evaluation. Additionally, schools report 24 "No" responses at Level 3, contrasting with some "Yes" responses at the same level, indicating inconsistencies in data recognition or access. These discrepancies suggest a lack of standardized understanding or uneven data coverage for tertiary education in the EMIS.

Recommendations

To address these gaps, GovTech and PPD should expand their evaluations to include Levels 2 (Dzongkhag) and 3 (Ministry), ensuring a comprehensive review of tertiary education data in the EMIS. Training programs should target stakeholders at all levels to standardize the understanding and reporting of tertiary education data. Additionally, efforts should focus on improving data integration and accessibility at Levels 2 and 3, particularly at the Dzongkhag level, which has the lowest acknowledgment. Regular cross-agency reviews and feedback mechanisms should be implemented to reconcile contradictions and improve the reliability of data recognition across all levels. By fostering collaboration and ensuring uniform evaluation criteria, the EMIS can better serve as a repository for tertiary education data.

2_2A1g. Is there essential student-level data in the EMIS, including immunization records?

Table 1.9

2_2A1g_L * 2_2A1g * ID Crosstabulation

Count					
ID			2_2A1g		Total
			0	1	
1	2_2A1g_L	1		1	1
	Total			1	1
2	2_2A1g_L	1		1	1
	Total			1	1
3	2_2A1g_L	1	2	5	7
		2	1	3	4
		3	1	1	2
	Total		4	9	13
4	2_2A1g_L	1	51	141	192
		3	10	17	27
	Total		61	158	219
Total	2_2A1g_L	1	53	148	201
		2	1	3	4
		3	11	18	29
	Total		65	169	234

General Trends

The crosstabulation data reveals that the EMIS is widely recognized for containing student immunization records, with 169 out of 234 responses (72.2%) indicating "Yes." The majority of positive responses are concentrated at Level 1 (School), with 148 out of 201 responses (73.6%) indicating "Yes," suggesting strong recognition of immunization data at this level. At Level 2 (Dzongkhag), only 3 out of 4 responses (75%) are positive, and at Level 3 (Ministry), 18 out of 29 responses (62.1%) indicate "Yes." These results demonstrate that while immunization data is

acknowledged at all levels, its recognition is strongest at the school level, with slightly lower acknowledgment at higher levels.

Item-by-Item Analysis

GovTech (ID 1) and PPD (ID 2) each provide one "Yes" response, exclusively for Level 1 (School), indicating limited input beyond this level. Dzongkhag (ID 3) provides broader acknowledgment, with "Yes" responses distributed across Level 1 (5 out of 7), Level 2 (3 out of 4), and Level 3 (1 out of 2), reflecting a more comprehensive recognition of immunization data. Schools (ID 4) dominate the responses, with 141 "Yes" responses for Level 1, 17 for Level 3, and no acknowledgment for Level 2, showing strong recognition at the school and ministry levels but gaps at the Dzongkhag level. This distribution highlights variability in acknowledgment across groups and levels.

Key Contradictions

The main contradiction arises from Dzongkhag (ID 3) and schools (ID 4). While Dzongkhag reports "No" responses for Levels 1 and 3, it simultaneously provides some positive acknowledgment for these levels. Similarly, schools report no acknowledgment for Level 2, despite some "Yes" responses from Dzongkhag for this level. Additionally, GovTech and PPD focus exclusively on Level 1, providing no input for higher levels, creating gaps in evaluation and recognition. These inconsistencies suggest varying levels of understanding or access to immunization data in the EMIS.

Recommendations

To address these inconsistencies, GovTech and PPD should expand their evaluations to include Levels 2 (Dzongkhag) and 3 (Ministry) to provide a more comprehensive assessment of immunization data in the EMIS. Targeted workshops and training programs should be conducted for Dzongkhag and school stakeholders to ensure consistency in recognizing and reporting immunization data across levels. Efforts should also focus on improving the integration and accessibility of immunization records at all levels, particularly at the Dzongkhag level, where acknowledgment is weaker. Regular cross-agency reviews and standardized evaluation criteria should be implemented to reconcile contradictions and enhance the reliability of data acknowledgment across all groups and levels. These steps will help strengthen the EMIS as a reliable repository for student immunization records.

2_2A1h. Is there essential student-level data in the EMIS, including health/illness history?

Table 1.10

2_2A1h_L * 2_2A1h * ID Crosstabulation

Count					
ID			2_2A1h		Total
			0	1	
1	2_2A1h_L	3	1		1
	Total		1		1
2	2_2A1h_L	1		1	1
	Total			1	1
3	2_2A1h_L	1	3	6	9
		2	1	2	3
		3	1	0	1
	Total		5	8	13

4	2_2A1h_L	1	94	89	183
		2	2	1	3
		3	15	9	24
	Total		111	99	210
Total	2_2A1h_L	1	97	96	193
		2	3	3	6
		3	17	9	26
	Total		117	108	225

General Trends

The crosstabulation data indicates that the EMIS partially includes student health/illness history data, with 108 out of 225 responses (48%) indicating "Yes." The highest acknowledgment is at Level 1 (School), where 96 out of 193 responses (49.7%) are positive, suggesting that health data is more commonly recognized at this level. At Level 3 (Ministry), only 9 out of 26 responses (34.6%) indicate "Yes," while Level 2 (Dzongkhag) has the lowest acknowledgment, with just 3 out of 6 responses (50%) indicating "Yes." These results demonstrate that recognition of health/illness data in the EMIS is moderate and varies across operational levels, with stronger acknowledgment at the school level.

Item-by-Item Analysis

GovTech (ID 1) and PPD (ID 2) each provide one "Yes" response exclusively for Level 1 (School), reflecting limited evaluation beyond this level. Dzongkhag (ID 3) reports broader acknowledgment, with "Yes" responses for Level 1 (6 out of 9), Level 2 (2 out of 3), and none for Level 3. Schools (ID 4) provide the majority of responses, with 89 "Yes" for Level 1, 1 for Level 2, and 9 for Level 3. While Level 1 receives the highest acknowledgment, limited recognition at Levels 2 and 3 highlights variability in the inclusion of health/illness data across levels.

Key Contradictions

A significant contradiction arises from schools (ID 4), which report 15 "No" responses for Level 3 despite contributing some "Yes" responses for the same level. Similarly, Dzongkhag (ID 3) provides "No" responses for Levels 1 and 3 while simultaneously acknowledging some data availability at these levels. Furthermore, GovTech and PPD focus exclusively on Level 1, leaving a gap in the evaluation of Levels 2 and 3. These inconsistencies suggest a lack of standardization in the understanding or reporting of health/illness history data in the EMIS.

Recommendations

To address these gaps, GovTech and PPD should expand their assessments to include Levels 2 (Dzongkhag) and 3 (Ministry), ensuring a comprehensive review of health/illness history data in the EMIS. Targeted workshops and training sessions should be conducted for Dzongkhag and school stakeholders to standardize recognition and reporting of this data across all levels. Efforts should also focus on improving the integration and accessibility of health/illness records at Levels 2 and 3, where acknowledgment is weaker. Regular cross-agency reviews and standardized evaluation frameworks should be implemented to reconcile contradictions and enhance the reliability of data reporting across groups and levels. These measures will strengthen the EMIS's capacity to manage health/illness history data comprehensively.

2_2A1i. Is there essential student-level data in the EMIS, including pregnancy history for females?

Table 1.11
2_2A1i_L * 2_2A1i * ID Crosstabulation

Count					
ID			2_2A1i		Total
			0	1	
1	2_2A1i_L	3	1		1
	Total		1		1
2	2_2A1i_L	1		1	1
	Total			1	1
3	2_2A1i_L	1	4	3	7
		2	3	1	4
		3	1	0	1
	Total		8	4	12
Total	2_2A1i_L	1	4	4	8
		2	3	1	4
		3	2	0	2
	Total		9	5	14

General Trends
The crosstabulation data indicates that the EMIS includes minimal acknowledgment of pregnancy history data for females, with only 5 out of 14 responses (35.7%) indicating "Yes." The majority of positive responses come from Level 1 (School), where 4 out of 8 responses (50%) are "Yes," showing that this level has the highest acknowledgment. Level 2 (Dzongkhag) and Level 3 (Ministry) receive only 1 positive response each, with acknowledgment rates of 25% and 0%, respectively. These results suggest that the inclusion of pregnancy history data is very limited in the EMIS, with the strongest recognition at the school level and minimal acknowledgment at higher levels.

Item-by-Item Analysis
GovTech (ID 1) provides one "Yes" response for Level 1 (School), reflecting no input for higher levels. PPD (ID 2) also contributes a single "Yes" response for Level 1, similar to GovTech. Dzongkhag (ID 3) shows broader acknowledgment, with "Yes" responses for Level 1 (3 out of 7), Level 2 (1 out of 4), and none for Level 3. No input or acknowledgment is reported for Levels 2 and 3 from GovTech or PPD, further highlighting the narrow scope of evaluation. While Level 1 dominates the positive responses, the limited acknowledgment at Levels 2 and 3 indicates significant gaps in data inclusion or recognition.

Key Contradictions
Contradictions are evident in Dzongkhag (ID 3) responses, which include "No" acknowledgments at all levels, despite some positive responses at Levels 1 and 2. Furthermore, GovTech and PPD only recognize pregnancy history data at Level 1, creating a gap in evaluation for higher levels. This lack of alignment across stakeholders suggests inconsistencies in data recognition, likely due to varying access or understanding of the EMIS functionality.

Recommendations
To address these gaps, it is recommended that GovTech and PPD expand their evaluations to include Levels 2 (Dzongkhag) and 3 (Ministry) for a more comprehensive assessment of

pregnancy history data inclusion in the EMIS. Training and capacity-building initiatives should target Dzongkhag and school-level stakeholders to standardize recognition and reporting of sensitive data like pregnancy history. Efforts should also focus on improving data integration at all levels, particularly at Levels 2 and 3, where acknowledgment is minimal. Implementing periodic cross-agency reviews and creating a standardized framework for assessing the inclusion of sensitive data can enhance consistency and ensure comprehensive data coverage across the EMIS. These steps will help bridge gaps and improve the system's utility as a comprehensive repository for student-level data.

2_2A1j. Is there essential student-level data in the EMIS, including special needs population data (e.g., learning needs, physical needs/disabilities)?

Table 1.12
2_2A1j_L * 2_2A1j * ID Crosstabulation

Count						
ID			2_2A1j			Total
			0	1	3	
1	2_2A1j_L	1		1		1
	Total			1		1
2	2_2A1j_L	0			1	1
	Total				1	1
3	2_2A1j_L	1	1	5		6
		2	2	2		4
		3	2	1		3
	Total		5	8		13
4	2_2A1j_L	1	55	123		178
		2	6	3		9
		3	13	18		31
	Total		74	144		218
Total	2_2A1j_L	0	0	0	1	1
		1	56	129	0	185
		2	8	5	0	13
		3	15	19	0	34
	Total		79	153	1	233

General Trends

The crosstabulation data indicates that the EMIS is recognized for including data on special needs populations, with 153 out of 233 responses (65.7%) indicating "Yes." The strongest acknowledgment is at Level 1 (School), where 129 out of 185 responses (69.7%) indicate "Yes." At Level 3 (Ministry), 19 out of 34 responses (55.9%) are positive, while Level 2 (Dzongkhag) has the lowest acknowledgment, with only 5 out of 13 responses (38.5%) indicating "Yes." These results suggest that special needs data is more widely recognized at the school level, with limited acknowledgment at the Dzongkhag and ministry levels.

Item-by-Item Analysis

GovTech (ID 1) provides one "Yes" response for Level 1 (School), indicating no evaluation beyond this level. PPD (ID 2) contributes one "No" response for Level 3 (Ministry), indicating a lack of acknowledgment for this data. Dzongkhag (ID 3) reports broader acknowledgment, with "Yes" responses for Level 1 (5 out of 6), Level 2 (2 out of 4), and Level 3 (1 out of 3). Schools (ID 4) dominate the responses, with 123 "Yes" for Level 1, 3 for Level 2, and 18 for Level 3. The strong agreement at Level 1 contrasts with lower acknowledgment at higher levels, highlighting variability in the recognition of special needs data.

Key Contradictions

Contradictions are evident in the responses from Dzongkhag (ID 3) and schools (ID 4). Dzongkhag provides "No" responses for Levels 1 and 3, despite also reporting some "Yes" responses for these levels. Similarly, schools report six "No" responses for Level 2 and 13 for Level 3, despite contributing some "Yes" responses for the same levels. Additionally, GovTech and PPD focus exclusively on Level 1, creating a gap in evaluation for higher levels. These inconsistencies suggest a lack of standardization in the recognition or reporting of special needs data.

Recommendations

To address these gaps, GovTech and PPD should expand their evaluations to include Levels 2 (Dzongkhag) and 3 (Ministry), ensuring comprehensive assessments of special needs data in the EMIS. Targeted training and workshops should be conducted for Dzongkhag and school stakeholders to improve understanding and standardize reporting of special needs data. Efforts should also focus on improving the integration and accessibility of this data at higher levels, particularly at the Dzongkhag level, where acknowledgment is lowest. Regular cross-agency reviews and the implementation of standardized evaluation frameworks will help reconcile contradictions and enhance the reliability of data reporting. These actions will strengthen the EMIS as a repository for special needs population data across all levels.

2_2A1k: Is there essential student-level data in the EMIS, including (answer yes/no for the list below and add additional categories in the comments section) Enrollment rates?

Table 1.13

2_2A1k_L * 2_2A1k * ID Crosstabulation

Count						
ID			2_2A1k			Total
			0	1	3	
1	2_2A1k_L	1		1		1
	Total			1		1
2	2_2A1k_L	1			1	1
	Total				1	1
3	2_2A1k_L	1	0	6		6
		2	3	2		5
		3	0	2		2
	Total		3	10		13
4	2_2A1k_L	1	43	138		181
		2	4	5		9
		3	8	21		29
	Total		55	164		219
Total	2_2A1k_L	1	43	145	1	189
		2	7	7	0	14

		3	8	23	0	31
	Total		58	175	1	234

General Trends

The crosstabulation data indicates that the EMIS is widely recognized for containing student enrollment rate data, with 175 out of 234 responses (74.8%) indicating "Yes." The strongest acknowledgment is at Level 1 (School), where 145 out of 189 responses (76.7%) are positive. At Level 3 (Ministry), 23 out of 31 responses (74.2%) indicate "Yes," showing similar levels of acknowledgment. Level 2 (Dzongkhag) has the lowest acknowledgment, with 7 out of 14 responses (50%) being positive. These results demonstrate strong recognition of enrollment rate data across all levels, particularly at the school and ministry levels, with some gaps at the Dzongkhag level.

Item-by-Item Analysis

GovTech (ID 1) provides one "Yes" response for Level 1 (School), reflecting no acknowledgment for higher levels. PPD (ID 2) contributes one "Yes" response for Level 3 (Ministry), indicating acknowledgment at this level but not at Levels 1 or 2. Dzongkhag (ID 3) reports broader acknowledgment, with "Yes" responses for Level 1 (6 out of 6), Level 2 (2 out of 5), and Level 3 (2 out of 2). Schools (ID 4) dominate the responses, with 138 "Yes" for Level 1, 5 for Level 2, and 21 for Level 3. While Levels 1 and 3 receive high acknowledgment, limited recognition at Level 2 highlights a gap in data inclusion or reporting.

Key Contradictions

Contradictions arise in Dzongkhag (ID 3) and schools (ID 4) responses. Dzongkhag provides "No" responses for Level 2, despite also reporting some "Yes" responses for this level. Similarly, schools report four "No" responses for Level 2, even though they contribute "Yes" responses for this level. GovTech and PPD focus exclusively on Levels 1 and 3, creating gaps in their acknowledgment for Level 2. These inconsistencies highlight a lack of standardization or differing levels of access to enrollment rate data in the EMIS.

Recommendations

To address these gaps, GovTech and PPD should expand their evaluations to include Level 2 (Dzongkhag), ensuring comprehensive assessments of enrollment rate data in the EMIS. Training programs should target Dzongkhag and school-level stakeholders to standardize recognition and reporting of enrollment rate data. Efforts should focus on improving data integration and accessibility at Level 2, where acknowledgment is weakest. Regular cross-agency reviews and standardized evaluation frameworks should be implemented to reconcile contradictions and enhance data reliability across all groups and levels. These measures will strengthen the EMIS as a comprehensive repository for student enrollment rate data.

2_2A1l: Is there essential student-level data in the EMIS, including transition rate (progression to next grade)?

Table 1.14

2_2A1l_L * 2_2A1l * ID Crosstabulation

Count		
ID	2_2A1l	Total

			0	1	
1	2_2A1l_L	1		1	1
	Total			1	1
2	2_2A1l_L	1		1	1
	Total			1	1
3	2_2A1l_L	1	0	6	6
		2	2	4	6
		3	0	1	1
	Total		2	11	13
4	2_2A1l_L	1	36	147	183
		2	1	5	6
		3	7	20	27
	Total		44	172	216
Total	2_2A1l_L	1	36	155	191
		2	3	9	12
		3	7	21	28
	Total		46	185	231

General Trends

The crosstabulation data indicates that the EMIS is widely recognized for including transition rate data (progression to the next grade), with 185 out of 231 responses (80.1%) indicating "Yes." The strongest acknowledgment is at Level 1 (School), where 155 out of 191 responses (81.2%) indicate "Yes." Level 3 (Ministry) has slightly lower acknowledgment, with 21 out of 28 responses (75%) being positive, and Level 2 (Dzongkhag) has the fewest "Yes" responses, with 9 out of 12 (75%) indicating acknowledgment. These results suggest that transition rate data is well recognized in the EMIS across all levels, with the highest acknowledgment at the school level.

Item-by-Item Analysis

GovTech (ID 1) and PPD (ID 2) each provide one "Yes" response for Level 1 (School), with no acknowledgment for other levels. Dzongkhag (ID 3) provides broader acknowledgment, with "Yes" responses for Level 1 (6 out of 6), Level 2 (4 out of 6), and Level 3 (1 out of 1). Schools (ID 4) dominate the responses, with 147 "Yes" for Level 1, 5 for Level 2, and 20 for Level 3. The consistent acknowledgment at Level 1 reflects strong confidence in the availability of transition rate data, while the lower recognition at Levels 2 and 3 suggests room for improvement.

Key Contradictions

Contradictions are evident in Dzongkhag (ID 3) and schools (ID 4) responses. Dzongkhag provides "No" responses for Levels 2 and 3 despite also reporting some "Yes" responses for these levels. Similarly, schools report 36 "No" responses for Level 1 and 7 for Level 3, even though they contribute significant "Yes" responses for these levels. GovTech and PPD focus exclusively on Level 1, creating gaps in acknowledgment for Levels 2 and 3. These inconsistencies point to potential disparities in understanding or access to transition rate data within the EMIS.

Recommendations

To address these gaps, GovTech and PPD should expand their evaluations to include Levels 2 (Dzongkhag) and 3 (Ministry), ensuring a comprehensive review of transition rate data in the EMIS. Training programs should target stakeholders at all levels to standardize recognition and reporting of transition rate data. Efforts should also focus on improving the integration and accessibility of this data at Levels 2 and 3, where acknowledgment is weakest. Regular cross-

agency reviews and the establishment of standardized evaluation frameworks will help reconcile contradictions and ensure more consistent reporting. These steps will strengthen the EMIS as a comprehensive and reliable repository for transition rate data across all levels.

2_2A1m. Is there essential student-level data in the EMIS, including repetition rate (repeating a year)?

Table 1.15
2_2A1m_L * 2_2A1m * ID Crosstabulation

Count					
ID			2_2A1m		Total
			0	1	
1	2_2A1m_L	1		1	1
	Total			1	1
2	2_2A1m_L	0		1	1
	Total			1	1
3	2_2A1m_L	1	1	7	8
		2	2	3	5
	Total		3	10	13
4	2_2A1m_L	1	64	119	183
		2	0	5	5
		3	10	12	22
	Total		74	136	210
Total	2_2A1m_L	0	0	1	1
		1	65	127	192
		2	2	8	10
		3	10	12	22
	Total		77	148	225

General Trends
The crosstabulation data indicates that the EMIS is widely recognized for including repetition rate data (students repeating a year), with 148 out of 225 responses (65.8%) indicating "Yes." The highest acknowledgment is at Level 1 (School), where 127 out of 192 responses (66.1%) indicate "Yes." Level 3 (Ministry) also shows notable acknowledgment, with 12 out of 22 responses (54.5%) being positive, while Level 2 (Dzongkhag) has the lowest acknowledgment, with 8 out of 10 responses (80%) indicating "Yes." These results suggest that repetition rate data is broadly recognized, particularly at the school level, with some acknowledgment at higher levels.

Item-by-Item Analysis
GovTech (ID 1) provides one "Yes" response for Level 1 (School) and no acknowledgment for other levels, reflecting limited evaluation beyond the school level. PPD (ID 2) contributes one "No" response for Level 1, indicating a lack of acknowledgment for this data. Dzongkhag (ID 3) provides broader acknowledgment, with "Yes" responses for Level 1 (7 out of 8), Level 2 (3 out of 5), and none for Level 3. Schools (ID 4) dominate the responses, with 119 "Yes" for Level 1, 5 for Level 2, and 12 for Level 3. While Level 1 receives the highest acknowledgment, there is variability in acknowledgment at Levels 2 and 3.

Key Contradictions

Contradictions arise in Dzongkhag (ID 3) and schools (ID 4) responses. Dzongkhag reports "No" responses for Level 2 despite also contributing "Yes" responses for this level. Similarly, schools report 64 "No" responses for Level 1 and 10 for Level 3, despite also contributing significant "Yes" responses for these levels. GovTech and PPD only provide input for Level 1, leaving gaps in acknowledgment for higher levels. These inconsistencies suggest a lack of standardization in recognition or access to repetition rate data within the EMIS.

Recommendations

To address these gaps, GovTech and PPD should expand their evaluations to include Levels 2 (Dzongkhag) and 3 (Ministry), ensuring a comprehensive review of repetition rate data in the EMIS. Training programs should target stakeholders at all levels to standardize recognition and reporting of this data. Efforts should focus on improving the integration and accessibility of repetition rate data at Levels 2 and 3, where acknowledgment is weakest. Regular cross-agency reviews and the implementation of standardized evaluation frameworks will help reconcile contradictions and enhance consistency in reporting. These measures will strengthen the EMIS as a reliable repository for repetition rate data across all levels.

2_2A1n. Is there essential student-level data in the EMIS, including drop-out rate?

Table 1.16

2_2A1n_L * 2_2A1n * ID Crosstabulation

Count					
ID			2_2A1n		Total
			0	1	
1	2_2A1n_L	1		1	1
	Total			1	1
2	2_2A1n_L	0		1	1
	Total			1	1
3	2_2A1n_L	1	4	6	10
		2	0	3	3
	Total		4	9	13
4	2_2A1n_L	1	84	90	174
		2	5	3	8
		3	11	17	28
	Total		100	110	210
Total	2_2A1n_L	0	0	1	1
		1	88	97	185
		2	5	6	11
		3	11	17	28
	Total		104	121	225

General Trends

The crosstabulation data indicates that the EMIS is widely recognized for including drop-out rate data, with 121 out of 225 responses (53.8%) indicating "Yes." The strongest acknowledgment is at Level 1 (School), where 97 out of 185 responses (52.4%) indicate "Yes." Level 3 (Ministry) also has notable acknowledgment, with 17 out of 28 responses (60.7%) being positive, while Level 2 (Dzongkhag) has the lowest acknowledgment, with only 6 out of 11 responses (54.5%) indicating "Yes." These results suggest that drop-out rate data is moderately recognized in the EMIS, with slightly stronger acknowledgment at the ministry level.

Item-by-Item Analysis
GovTech (ID 1) provides one "Yes" response for Level 1 (School), and no acknowledgment for higher levels. PPD (ID 2) contributes one "No" response for Level 1, indicating a lack of acknowledgment for this data. Dzongkhag (ID 3) provides broader acknowledgment, with "Yes" responses for Level 1 (6 out of 10) and Level 2 (3 out of 3), but none for Level 3. Schools (ID 4) dominate the responses, with 90 "Yes" for Level 1, 3 for Level 2, and 17 for Level 3. While Level 1 receives the majority of acknowledgment, there is variability in recognition at Levels 2 and 3.

Key Contradictions
Contradictions arise in Dzongkhag (ID 3) and schools (ID 4) responses. Dzongkhag provides "No" responses for Level 1 despite contributing some "Yes" responses for this level. Similarly, schools report 84 "No" responses for Level 1 and 11 for Level 3, despite also contributing significant "Yes" responses for these levels. GovTech and PPD focus exclusively on Level 1, leaving gaps in acknowledgment for Levels 2 and 3. These inconsistencies highlight potential disparities in understanding or access to drop-out rate data within the EMIS.

Recommendations
To address these gaps, GovTech and PPD should expand their evaluations to include Levels 2 (Dzongkhag) and 3 (Ministry), ensuring a comprehensive review of drop-out rate data in the EMIS. Training programs should target stakeholders at all levels to standardize recognition and reporting of this data. Efforts should focus on improving the integration and accessibility of drop-out rate data at Levels 2 and 3, where acknowledgment is weakest. Regular cross-agency reviews and standardized evaluation frameworks should be implemented to reconcile contradictions and enhance consistency in reporting. These measures will strengthen the EMIS as a reliable repository for drop-out rate data across all levels.

2_2A1o. Is there essential student-level data in the EMIS, including failure rate by class?

Table 1.17
2_2A1o_L * 2_2A1o * ID Crosstabulation

Count						
ID			2_2A1o			Total
			0	1	3	
1	2_2A1o_L	3	1			1
	Total		1			1
2	2_2A1o_L	1			1	1
	Total				1	1
3	2_2A1o_L	1	1	8		9
		2	1	3		4
	Total		2	11		13
4	2_2A1o_L	1	66	110		176
		2	3	4		7
		3	15	14		29
	Total		84	128		212
Total	2_2A1o_L	1	67	118	1	186
		2	4	7	0	11
		3	16	14	0	30
	Total		87	139	1	227

General Trends
The crosstabulation data reveals that the EMIS is moderately recognized for including failure rate data by class, with 139 out of 227 responses (61.2%) indicating "Yes." The strongest acknowledgment is at Level 1 (School), where 118 out of 186 responses (63.4%) indicate "Yes." Level 3 (Ministry) shows a slightly lower acknowledgment, with 14 out of 30 responses (46.7%) being positive, while Level 2 (Dzongkhag) has the fewest positive responses, with only 7 out of 11 (63.6%) indicating "Yes." These results suggest that failure rate data is most widely recognized at the school level, with some acknowledgment at higher levels, but gaps remain in consistent data inclusion.

Item-by-Item Analysis
GovTech (ID 1) provides one "Yes" response for Level 1 (School) and no acknowledgment for other levels. PPD (ID 2) also contributes one "Yes" response for Level 3 (Ministry), showing minimal engagement. Dzongkhag (ID 3) provides broader acknowledgment, with "Yes" responses for Level 1 (8 out of 9) and Level 2 (3 out of 4) but no acknowledgment for Level 3. Schools (ID 4) dominate the responses, with 110 "Yes" for Level 1, 4 for Level 2, and 14 for Level 3. While Level 1 dominates the responses, acknowledgment at Levels 2 and 3 is notably lower, indicating uneven recognition of failure rate data across levels.

Key Contradictions
Contradictions are evident in Dzongkhag (ID 3) and schools (ID 4) responses. Dzongkhag reports "No" responses for Level 2 despite also contributing "Yes" responses for this level. Similarly, schools report 66 "No" responses for Level 1 and 15 for Level 3, even though they contribute significant "Yes" responses for these levels. GovTech and PPD focus exclusively on Levels 1 and 3, creating gaps in acknowledgment for Level 2. These inconsistencies suggest a lack of standardization or differing interpretations of failure rate data inclusion within the EMIS.

Recommendations
To address these gaps, GovTech and PPD should expand their evaluations to include Level 2 (Dzongkhag), ensuring a more comprehensive review of failure rate data in the EMIS. Targeted training programs should be conducted to standardize data recognition and reporting across all levels. Efforts should also focus on improving the integration and accessibility of failure rate data at Levels 2 and 3, where acknowledgment is weaker. Regular cross-agency reviews and the implementation of standardized evaluation frameworks will help reconcile contradictions and enhance data consistency across groups and levels. These measures will strengthen the EMIS's role as a reliable repository for failure rate data by class.

2_2A1p. Is there essential student-level data in the EMIS, including failure rate by teacher?

Table 1.18
2_2A1p_L * 2_2A1p * ID Crosstabulation

Count			
ID	2_2A1p		Total
	0	1	

1	2_2A1p_L	3	1		1
	Total		1		1
2	2_2A1p_L	1		1	1
	Total			1	1
3	2_2A1p_L	1	4	3	7
		2	1	3	4
		3	1	0	1
	Total		6	6	12
4	2_2A1p_L	1	112	58	170
		2	8	3	11
		3	21	4	25
	Total		141	65	206
Total	2_2A1p_L	1	116	62	178
		2	9	6	15
		3	23	4	27
	Total		148	72	220

General Trends

The crosstabulation data reveals that the EMIS includes limited acknowledgment of failure rate data by teacher, with only 72 out of 220 responses (32.7%) indicating "Yes." The highest acknowledgment is at Level 1 (School), where 62 out of 178 responses (34.8%) are positive. Level 2 (Dzongkhag) has only 6 out of 15 responses (40%) indicating "Yes," while Level 3 (Ministry) has the lowest acknowledgment, with 4 out of 27 responses (14.8%) being positive. These results suggest that failure rate data by teacher is less commonly recognized in the EMIS, particularly at the ministry level.

Item-by-Item Analysis

GovTech (ID 1) provides one "Yes" response for Level 1 (School) and no acknowledgment for higher levels. PPD (ID 2) also contributes one "Yes" response for Level 1, indicating minimal acknowledgment beyond this level. Dzongkhag (ID 3) reports "Yes" responses for Level 1 (3 out of 7), Level 2 (3 out of 4), and none for Level 3. Schools (ID 4) dominate the responses, with 58 "Yes" for Level 1, 3 for Level 2, and 4 for Level 3. However, the acknowledgment of failure rate data by teacher is relatively weak across all levels, with Level 1 receiving the most acknowledgment.

Key Contradictions

Contradictions arise in Dzongkhag (ID 3) and schools (ID 4) responses. Dzongkhag reports "No" responses for Levels 1 and 3 despite contributing some "Yes" responses for these levels. Similarly, schools report 112 "No" responses for Level 1 and 21 for Level 3, even though they contribute some "Yes" responses for these levels. GovTech and PPD only acknowledge Level 1, leaving gaps in acknowledgment for Levels 2 and 3. These inconsistencies suggest a lack of standardization in understanding or reporting of failure rate data by teacher in the EMIS.

Recommendations

To address these gaps, GovTech and PPD should expand their evaluations to include Levels 2 (Dzongkhag) and 3 (Ministry), ensuring a more comprehensive review of failure rate data by teacher in the EMIS. Targeted training programs should be conducted to standardize data recognition and reporting across all levels. Efforts should focus on improving the integration and accessibility of this data at all levels, particularly at the ministry level, where acknowledgment is

weakest. Regular cross-agency reviews and the implementation of standardized evaluation frameworks will help reconcile contradictions and improve data reliability across groups and levels. These actions will strengthen the EMIS's capacity to provide actionable insights based on failure rate data by teacher.

2_2A1q. Is there essential student-level data in the EMIS, including behavioral data (e.g., absenteeism, late arrivals)?

Table 1.19
2_2A1q_L * 2_2A1q * ID Crosstabulation

Count					
ID			2_2A1q		Total
			0	1	
1	2_2A1q_L	1		1	1
	Total			1	1
2	2_2A1q_L	1		1	1
	Total			1	1
3	2_2A1q_L	1	5	4	9
		2	2	1	3
	Total		7	5	12
4	2_2A1q_L	1	63	135	198
		2	0	3	3
		3	8	8	16
	Total		71	146	217
Total	2_2A1q_L	1	68	141	209
		2	2	4	6
		3	8	8	16
	Total		78	153	231

General Trends
The crosstabulation data indicates that the EMIS is moderately recognized for including behavioral data (e.g., absenteeism, late arrivals), with 153 out of 231 responses (66.2%) indicating "Yes." The highest acknowledgment is at Level 1 (School), where 141 out of 209 responses (67.5%) indicate "Yes." Level 3 (Ministry) has lower acknowledgment, with 8 out of 16 responses (50%) being positive, and Level 2 (Dzongkhag) has the fewest positive responses, with 4 out of 6 responses (66.7%) indicating "Yes." These results suggest that behavioral data is more widely recognized at the school level, with some acknowledgment at higher levels, but gaps remain in consistent data inclusion.

Item-by-Item Analysis
GovTech (ID 1) and PPD (ID 2) each provide one "Yes" response for Level 1 (School) and no acknowledgment for higher levels. Dzongkhag (ID 3) reports broader acknowledgment, with "Yes" responses for Level 1 (4 out of 9) and Level 2 (1 out of 3), but no acknowledgment for Level 3. Schools (ID 4) dominate the responses, with 135 "Yes" for Level 1, 3 for Level 2, and 8 for Level 3. While Level 1 receives the most acknowledgment, there is variability in recognition at Levels 2 and 3, highlighting inconsistencies in data inclusion.

Key Contradictions

Contradictions arise in Dzongkhag (ID 3) and schools (ID 4) responses. Dzongkhag reports "No" responses for Level 1 despite also contributing "Yes" responses for this level. Similarly, schools report 63 "No" responses for Level 1 and 8 for Level 3, even though they contribute significant "Yes" responses for these levels. GovTech and PPD focus exclusively on Level 1, leaving gaps in acknowledgment for Levels 2 and 3. These inconsistencies suggest a lack of standardization or varying interpretations of behavioral data inclusion within the EMIS.

Recommendations

To address these gaps, GovTech and PPD should expand their evaluations to include Levels 2 (Dzongkhag) and 3 (Ministry), ensuring a comprehensive review of behavioral data in the EMIS. Targeted training programs should be conducted to standardize data recognition and reporting across all levels. Efforts should also focus on improving the integration and accessibility of behavioral data at all levels, particularly at the ministry level, where acknowledgment is weakest. Regular cross-agency reviews and the implementation of standardized evaluation frameworks will help reconcile contradictions and improve data reliability across groups and levels. These actions will strengthen the EMIS's capacity to provide comprehensive behavioral data insights.

2_2A1r. Is there essential student-level data in the EMIS, including student-level course completion (transcript) data?

Table 1.20

2_2A1r_L * 2_2A1r * ID Crosstabulation

Count					
ID			2_2A1r		Total
			0	1	
1	2_2A1r_L	1		1	1
	Total			1	1
2	2_2A1r_L	1		1	1
	Total			1	1
3	2_2A1r_L	1	0	8	8
		2	1	2	3
		3	1	0	1
	Total		2	10	12
4	2_2A1r_L	1	46	149	195
		2	1	4	5
		3	3	15	18
	Total		50	168	218
Total	2_2A1r_L	1	46	159	205
		2	2	6	8
		3	4	15	19
	Total		52	180	232

General Trends

The crosstabulation data shows that the EMIS is widely recognized for including student-level course completion (transcript) data, with 180 out of 232 responses (77.6%) indicating "Yes." The highest acknowledgment is at Level 1 (School), where 159 out of 205 responses (77.6%) indicate "Yes." Level 3 (Ministry) has moderate acknowledgment, with 15 out of 19 responses (78.9%) being positive, and Level 2 (Dzongkhag) has the fewest positive responses, with only 6 out of 8

responses (75%) indicating "Yes." These results suggest that course completion data is well recognized in the EMIS across all levels, particularly at the school and ministry levels.
Item-by-Item Analysis

GovTech (ID 1) and PPD (ID 2) each provide one "Yes" response for Level 1 (School), indicating no acknowledgment beyond this level. Dzongkhag (ID 3) provides broader acknowledgment, with "Yes" responses for Level 1 (8 out of 8), Level 2 (2 out of 3), and none for Level 3. Schools (ID 4) dominate the responses, with 149 "Yes" for Level 1, 4 for Level 2, and 15 for Level 3. While Level 1 consistently receives the highest acknowledgment, there is variability in recognition at Levels 2 and 3, suggesting uneven acknowledgment of course completion data.

Key Contradictions
Contradictions arise in Dzongkhag (ID 3) and schools (ID 4) responses. Dzongkhag reports one "No" response for Level 2 despite also contributing "Yes" responses for this level. Similarly, schools report 46 "No" responses for Level 1 and 3 for Level 3, even though they contribute significant "Yes" responses for these levels. GovTech and PPD focus exclusively on Level 1, leaving gaps in acknowledgment for Levels 2 and 3. These inconsistencies indicate potential disparities in understanding or access to course completion data in the EMIS.

Recommendations
To address these gaps, GovTech and PPD should expand their evaluations to include Levels 2 (Dzongkhag) and 3 (Ministry), ensuring a comprehensive review of course completion data in the EMIS. Targeted training programs should be conducted to standardize data recognition and reporting across all levels. Efforts should also focus on improving the integration and accessibility of course completion data at all levels, particularly at Level 2, where acknowledgment is weakest. Regular cross-agency reviews and standardized evaluation frameworks should be implemented to reconcile contradictions and enhance consistency in reporting. These measures will strengthen the EMIS as a reliable repository for student-level course completion data across all levels.

2_2A2ai. Is there essential school-level data in the EMIS, including school performance and efficacy data like student to teacher ratios?

Table 1.21
2_2A2ai_L * 2_2A2ai * ID Crosstabulation

Count					
ID			2_2A2ai		Total
			0	1	
1	2_2A2ai_L	1		1	1
	Total			1	1
2	2_2A2ai_L	1		1	1
	Total			1	1
3	2_2A2ai_L	1	2	6	8
		2	1	2	3
		3	0	2	2
	Total		3	10	13
4	2_2A2ai_L	1	79	94	173
		2	2	4	6
		3	16	14	30

	Total		97	112	209
Total	2_2A2ai_L	1	81	102	183
		2	3	6	9
		3	16	16	32
	Total		100	124	224

General Trends
The crosstabulation data indicates that the EMIS is moderately recognized for including school-level performance and efficacy data, specifically student-to-teacher ratios. Out of 224 total responses, 124 (55.4%) indicate "Yes." The highest acknowledgment is at Level 1 (School), where 102 out of 183 responses (55.7%) are positive. Level 3 (Ministry) shows a similar acknowledgment, with 16 out of 32 responses (50%) being positive, while Level 2 (Dzongkhag) has the lowest acknowledgment, with only 6 out of 9 responses (66.7%) indicating "Yes." These results suggest moderate recognition of this data in the EMIS, with relatively consistent acknowledgment across levels.

Item-by-Item Analysis
GovTech (ID 1) and PPD (ID 2) each provide one "Yes" response for Level 1 (School), reflecting minimal input beyond this level. Dzongkhag (ID 3) contributes "Yes" responses for Level 1 (6 out of 8), Level 2 (2 out of 3), and Level 3 (2 out of 2). Schools (ID 4) dominate the responses, with 94 "Yes" for Level 1, 4 for Level 2, and 14 for Level 3. While Level 1 receives the majority of acknowledgment, recognition at Levels 2 and 3 is comparatively weaker.

Key Contradictions
Contradictions are evident in Dzongkhag (ID 3) and schools (ID 4) responses. Dzongkhag provides "No" responses for Levels 1 and 2 despite also contributing "Yes" responses for these levels. Similarly, schools report 79 "No" responses for Level 1 and 16 for Level 3, even though they also provide significant "Yes" responses for these levels. GovTech and PPD focus exclusively on Level 1, leaving gaps in acknowledgment for higher levels. These inconsistencies suggest a lack of standardization or varying interpretations of student-to-teacher ratio data inclusion within the EMIS.

Recommendations
To address these gaps, GovTech and PPD should expand their evaluations to include Levels 2 (Dzongkhag) and 3 (Ministry), ensuring a comprehensive review of student-to-teacher ratio data in the EMIS. Training programs should be conducted to standardize recognition and reporting of school-level data across all levels. Efforts should focus on improving the integration and accessibility of this data at Levels 2 and 3, where acknowledgment is weaker. Regular cross-agency reviews and the implementation of standardized evaluation frameworks will help reconcile contradictions and enhance consistency in reporting. These actions will strengthen the EMIS's capacity to provide comprehensive insights into school-level performance and efficacy.

2_2A2aii. Is there essential school-level data in the EMIS, including school performance and efficacy data like student-to-school ratio?

Table 1.22
2_2A2aii_L * 2_2A2aii * ID Crosstabulation

Count					
ID			2_2A2aii		Total
			0	1	
1	2_2A2aii_L	1		1	1
	Total			1	1
2	2_2A2aii_L	0		1	1
	Total			1	1
3	2_2A2aii_L	1	1	5	6
		2	1	2	3
		3	1	2	3
	Total		3	9	12
4	2_2A2aii_L	1	96	70	166
		2	5	6	11
		3	21	11	32
	Total		122	87	209
Total	2_2A2aii_L	0	0	1	1
		1	97	76	173
		2	6	8	14
		3	22	13	35
	Total		125	98	223

General Trends

The crosstabulation data indicates that the EMIS includes data on student-to-school ratios, with 98 out of 223 responses (43.9%) indicating "Yes." The highest acknowledgment is at Level 1 (School), where 76 out of 173 responses (43.9%) are positive. Level 3 (Ministry) shows a slightly lower acknowledgment, with 13 out of 35 responses (37.1%) being positive. Level 2 (Dzongkhag) has the fewest positive responses, with only 8 out of 14 (57.1%) indicating "Yes." These results suggest moderate recognition of student-to-school ratio data across all levels, with the highest acknowledgment at the school level and weaker acknowledgment at the ministry level.

Item-by-Item Analysis

GovTech (ID 1) provides one "Yes" response for Level 1 (School) and no acknowledgment for higher levels. PPD (ID 2) contributes one "No" response for Level 1, indicating minimal acknowledgment. Dzongkhag (ID 3) provides broader acknowledgment, with "Yes" responses for Level 1 (5 out of 6), Level 2 (2 out of 3), and Level 3 (2 out of 3). Schools (ID 4) dominate the responses, with 70 "Yes" for Level 1, 6 for Level 2, and 11 for Level 3. While Level 1 consistently receives the most acknowledgment, Levels 2 and 3 show less consistent recognition of student-to-school ratio data.

Key Contradictions

Contradictions arise in Dzongkhag (ID 3) and schools (ID 4) responses. Dzongkhag reports one "No" response for each level, despite also contributing "Yes" responses for these levels. Similarly, schools report 96 "No" responses for Level 1 and 21 for Level 3, even though they contribute significant "Yes" responses for these levels. GovTech and PPD only acknowledge Level 1, leaving gaps in acknowledgment for Levels 2 and 3. These inconsistencies highlight a lack of standardization in understanding or reporting of student-to-school ratio data in the EMIS.

Recommendations

To address these gaps, GovTech and PPD should expand their evaluations to include Levels 2 (Dzongkhag) and 3 (Ministry), ensuring a comprehensive review of student-to-school ratio data in the EMIS. Training programs should target stakeholders at all levels to standardize recognition and reporting of this data. Efforts should focus on improving the integration and accessibility of student-to-school ratio data at Levels 2 and 3, where acknowledgment is weaker. Regular cross-agency reviews and the implementation of standardized evaluation frameworks will help reconcile contradictions and enhance consistency in reporting. These measures will strengthen the EMIS's capacity to provide reliable and comprehensive school-level performance data.

2_2A2aiii. Is there essential school-level data in the EMIS, including school performance and efficacy data like graduation rates for school by grade per year?

Table 1.23
2_2A2aiii_L * 2_2A2aii_L * ID Crosstabulation

Count							
ID			2_2A2aii_L				Total
			0	1	2	3	
1	2_2A2aiii_L	1		1			1
	Total			1			1
2	2_2A2aiii_L	1	1				1
	Total		1				1
3	2_2A2aiii_L	1		6	0	2	8
		2		0	3	0	3
		3		0	0	1	1
	Total			6	3	3	12
4	2_2A2aiii_L	1		159	5	7	171
		2		2	2	2	6
		3		2	4	23	29
	Total			163	11	32	206
Total	2_2A2aiii_L	1	1	166	5	9	181
		2	0	2	5	2	9
		3	0	2	4	24	30
	Total		1	170	14	35	220

General Trends
The crosstabulation data indicates that the EMIS includes graduation rates for schools by grade per year, with 170 out of 220 responses (77.3%) indicating "Yes." The highest acknowledgment is at Level 1 (School), where 166 out of 181 responses (91.7%) are positive. Level 3 (Ministry) has a lower acknowledgment, with 24 out of 30 responses (80%) being positive. Level 2 (Dzongkhag) has the lowest acknowledgment, with 5 out of 9 responses (55.6%) indicating "Yes." These results suggest that graduation rate data is widely recognized, especially at the school level, but acknowledgment at Dzongkhag and ministry levels is comparatively lower.

Item-by-Item Analysis
GovTech (ID 1) provides one "Yes" response for Level 1 (School) and no acknowledgment for other levels. PPD (ID 2) contributes one "Yes" response for Level 1, indicating minimal engagement. Dzongkhag (ID 3) provides broader acknowledgment, with "Yes" responses for Level 1 (6 out of 8) and Level 2 (3 out of 3), but limited acknowledgment for Level 3 (1 out of 1). Schools (ID 4) dominate the responses, with 159 "Yes" for Level 1, 2 for Level 2, and 4 for Level

3. The consistent acknowledgment at Level 1 contrasts with the variability at Levels 2 and 3, highlighting gaps in recognition of graduation rate data across levels.

Key Contradictions
Contradictions arise in Dzongkhag (ID 3) and schools (ID 4) responses. Dzongkhag reports "No" responses for Level 1 despite also contributing significant "Yes" responses for this level. Similarly, schools report 159 "Yes" responses for Level 1 but only minimal acknowledgment for Levels 2 and 3. GovTech and PPD focus exclusively on Level 1, leaving gaps in acknowledgment for higher levels. These inconsistencies suggest a lack of standardization or different levels of access to graduation rate data across stakeholders.

Recommendations
To address these gaps, GovTech and PPD should expand their evaluations to include Levels 2 (Dzongkhag) and 3 (Ministry), ensuring a comprehensive review of graduation rate data in the EMIS. Targeted training programs should be conducted for stakeholders at all levels to standardize data recognition and reporting. Efforts should focus on improving the integration and accessibility of graduation rate data at Levels 2 and 3, where acknowledgment is weaker. Regular cross-agency reviews and standardized evaluation frameworks should be implemented to reconcile contradictions and enhance consistency in reporting. These measures will strengthen the EMIS as a reliable repository for school-level graduation rate data.

2_2A2aiv. Is there essential school-level data in the EMIS, including school performance and efficacy data on achieving milestones in plans?

Table 1.24
2_2A2aiv_L * 2_2A2aiv * ID Crosstabulation

Count					
ID			2_2A2aiv		Total
			0	1	
1	2_2A2aiv_L	3		1	1
	Total			1	1
2	2_2A2aiv_L	1		1	1
	Total			1	1
3	2_2A2aiv_L	1	1	3	4
		2	1	3	4
		3	3	1	4
	Total		5	7	12
4	2_2A2aiv_L	1	77	97	174
		2	4	8	12
		3	12	13	25
	Total		93	118	211
Total	2_2A2aiv_L	1	78	101	179
		2	5	11	16
		3	15	15	30
	Total		98	127	225

General Trends
The crosstabulation data indicates that the EMIS includes data on whether school plans exist and progress toward achieving milestones, with 127 out of 225 responses (56.4%) indicating "Yes."

The highest acknowledgment is at Level 1 (School), where 101 out of 179 responses (56.4%) are positive. Level 3 (Ministry) shows moderate acknowledgment, with 15 out of 30 responses (50%) being positive, while Level 2 (Dzongkhag) has the lowest acknowledgment, with 11 out of 16 responses (68.8%) indicating "Yes." These results suggest moderate recognition of milestone achievement data, particularly at the school level, with weaker acknowledgment at the Dzongkhag and ministry levels.

Item-by-Item Analysis
GovTech (ID 1) provides one "Yes" response for Level 1 (School), with no acknowledgment for other levels. PPD (ID 2) also contributes one "Yes" response for Level 1, reflecting limited engagement. Dzongkhag (ID 3) reports broader acknowledgment, with "Yes" responses for Level 1 (3 out of 4), Level 2 (3 out of 4), and Level 3 (1 out of 4). Schools (ID 4) dominate the responses, with 97 "Yes" for Level 1, 8 for Level 2, and 13 for Level 3. While Level 1 consistently receives the highest acknowledgment, the lower recognition at Levels 2 and 3 indicates room for improvement.

Key Contradictions
Contradictions are evident in Dzongkhag (ID 3) and schools (ID 4) responses. Dzongkhag reports "No" responses for Levels 1, 2, and 3 despite also contributing "Yes" responses for these levels. Similarly, schools report 77 "No" responses for Level 1 and 12 for Level 3, even though they also contribute significant "Yes" responses for these levels. GovTech and PPD only acknowledge Level 1, leaving gaps in acknowledgment for Levels 2 and 3. These inconsistencies suggest a lack of standardization in the understanding or reporting of milestone achievement data in school plans.

Recommendations
To address these gaps, GovTech and PPD should expand their evaluations to include Levels 2 (Dzongkhag) and 3 (Ministry), ensuring a more comprehensive review of milestone achievement data in the EMIS. Training programs should be conducted for stakeholders at all levels to standardize recognition and reporting of this data. Efforts should focus on improving the integration and accessibility of milestone data at Levels 2 and 3, where acknowledgment is weaker. Regular cross-agency reviews and standardized evaluation frameworks should be implemented to reconcile contradictions and enhance data reliability. These measures will strengthen the EMIS as a comprehensive and reliable repository for school performance and efficacy data.

2_2A2av. Is there essential school-level data in the EMIS, including school performance and efficacy data on progress reports to track school performance?

Table 1.25
2_2A2av_L * 2_2A2av * ID Crosstabulation

Count					
ID			2_2A2av		Total
			0	1	
1	2_2A2av_L	3		1	1
	Total			1	1
2	2_2A2av_L	1		1	1
	Total			1	1

3	2_2A2av_L	1	0	6	6
		2	0	3	3
		3	2	2	4
	Total		2	11	13
4	2_2A2av_L	1	34	143	177
		2	2	5	7
		3	5	28	33
	Total		41	176	217
Total	2_2A2av_L	1	34	150	184
		2	2	8	10
		3	7	31	38
	Total		43	189	232

General Trends

The crosstabulation data indicates that the EMIS includes progress reports to track school performance, with 189 out of 232 responses (81.5%) indicating "Yes." The highest acknowledgment is at Level 1 (School), where 150 out of 184 responses (81.5%) are positive. Level 3 (Ministry) has moderate acknowledgment, with 31 out of 38 responses (81.6%) being positive, while Level 2 (Dzongkhag) has the lowest acknowledgment, with 8 out of 10 responses (80%) indicating "Yes." These results suggest strong recognition of progress reporting data across all levels, particularly at the school and ministry levels.

Item-by-Item Analysis

GovTech (ID 1) provides one "Yes" response for Level 1 (School) and no acknowledgment for other levels. PPD (ID 2) also contributes one "Yes" response for Level 1, indicating minimal engagement beyond this level. Dzongkhag (ID 3) reports broader acknowledgment, with "Yes" responses for Level 1 (6 out of 6), Level 2 (3 out of 3), and Level 3 (2 out of 4). Schools (ID 4) dominate the responses, with 143 "Yes" for Level 1, 5 for Level 2, and 28 for Level 3. The strong acknowledgment at Level 1 is complemented by consistent recognition at Levels 2 and 3, albeit with slightly lower acknowledgment rates.

Key Contradictions

Contradictions arise in Dzongkhag (ID 3) and schools (ID 4) responses. Dzongkhag reports two "No" responses for Level 3, despite also contributing two "Yes" responses for this level. Similarly, schools report 34 "No" responses for Level 1 and 5 for Level 3, even though they contribute significant "Yes" responses for these levels. GovTech and PPD only acknowledge Level 1, leaving gaps in acknowledgment for Levels 2 and 3. These inconsistencies suggest potential disparities in understanding or reporting of progress reporting data within the EMIS.

Recommendations

To address these gaps, GovTech and PPD should expand their evaluations to include Levels 2 (Dzongkhag) and 3 (Ministry), ensuring a comprehensive review of progress reporting data in the EMIS. Training programs should target stakeholders at all levels to standardize recognition and reporting of this data. Efforts should focus on improving the integration and accessibility of progress reports at Levels 2 and 3, where acknowledgment is slightly weaker. Regular cross-agency reviews and standardized evaluation frameworks will help reconcile contradictions and enhance data reliability. These measures will strengthen the EMIS as a reliable repository for progress reporting data to track school performance.

2_2A2avi. Is there essential school-level data in the EMIS, including school performance and efficacy data on student learning objectives (if applicable)?

Table 1.26
2_2A2avi_L * 2_2A2avi * ID Crosstabulation

Count					
ID			2_2A2avi		Total
			0	1	
1	2_2A2avi_L	3	1		1
	Total		1		1
2	2_2A2avi_L	1		1	1
	Total			1	1
3	2_2A2avi_L	1	3	5	8
		2	2	1	3
		3	2	0	2
	Total		7	6	13
4	2_2A2avi_L	1	117	70	187
		2	3	1	4
		3	13	5	18
	Total		133	76	209
Total	2_2A2avi_L	1	120	76	196
		2	5	2	7
		3	16	5	21
	Total		141	83	224

General Trends
The crosstabulation data indicates that the EMIS includes data on student learning objectives, with 83 out of 224 responses (37.1%) indicating "Yes." The highest acknowledgment is at Level 1 (School), where 76 out of 196 responses (38.8%) are positive. Level 3 (Ministry) has moderate acknowledgment, with 5 out of 21 responses (23.8%) being positive. Level 2 (Dzongkhag) has the fewest positive responses, with only 2 out of 7 responses (28.6%) indicating "Yes." These results suggest that recognition of data on student learning objectives is relatively low across all levels, with slightly better acknowledgment at the school level.

Item-by-Item Analysis
GovTech (ID 1) provides one "Yes" response for Level 1 (School) and no acknowledgment for other levels. PPD (ID 2) also contributes one "Yes" response for Level 1, reflecting minimal engagement beyond this level. Dzongkhag (ID 3) reports broader acknowledgment, with "Yes" responses for Level 1 (5 out of 8), Level 2 (1 out of 3), and none for Level 3. Schools (ID 4) dominate the responses, with 70 "Yes" for Level 1, 1 for Level 2, and 5 for Level 3. The consistent acknowledgment at Level 1 highlights the higher recognition of student learning objectives at the school level, while Levels 2 and 3 show weaker acknowledgment.

Key Contradictions
Contradictions arise in Dzongkhag (ID 3) and schools (ID 4) responses. Dzongkhag reports three "No" responses for Level 1, despite also contributing five "Yes" responses for this level. Similarly, schools report 117 "No" responses for Level 1 and 13 for Level 3, even though they contribute significant "Yes" responses for these levels. GovTech and PPD only acknowledge Level 1, leaving

gaps in acknowledgment for Levels 2 and 3. These inconsistencies suggest potential disparities in understanding or reporting of student learning objectives data within the EMIS.

Recommendations

To address these gaps, GovTech and PPD should expand their evaluations to include Levels 2 (Dzongkhag) and 3 (Ministry), ensuring a more comprehensive review of student learning objectives data in the EMIS. Targeted training programs should focus on stakeholders at all levels to standardize recognition and reporting of this data. Efforts should also concentrate on improving the integration and accessibility of learning objective data at Levels 2 and 3, where acknowledgment is weakest. Regular cross-agency reviews and the implementation of standardized evaluation frameworks will help reconcile contradictions and enhance data reliability. These measures will strengthen the EMIS's role as a reliable repository for data on student learning objectives.

2_2A2b. Is there essential school-level data in the EMIS, including school performance and efficacy data on financial assistance (e.g., school-feeding programs)?

Table 1.27

2_2A2b_L * 2_2A2b * ID Crosstabulation

Count					
ID			2_2A2b		Total
			0	1	
1	2_2A2b_L	1		1	1
	Total			1	1
2	2_2A2b_L	1		1	1
	Total			1	1
3	2_2A2b_L	1	0	4	4
		2	0	4	4
		3	2	3	5
	Total		2	11	13
4	2_2A2b_L	1	33	130	163
		2	2	7	9
		3	9	37	46
	Total		44	174	218
Total	2_2A2b_L	1	33	136	169
		2	2	11	13
		3	11	40	51
	Total		46	187	233

General Trends

The crosstabulation data indicates that the EMIS includes school-level financial assistance data, such as information on school-feeding programs, with 187 out of 233 responses (80.3%) indicating "Yes." The highest acknowledgment is at Level 1 (School), where 136 out of 169 responses (80.5%) are positive. Level 3 (Ministry) shows moderate acknowledgment, with 40 out of 51 responses (78.4%) being positive. Level 2 (Dzongkhag) has the fewest positive responses, with 11

out of 13 responses (84.6%) indicating "Yes." These results suggest strong recognition of financial assistance data across all levels, with slightly higher acknowledgment at the school level.

Item-by-Item Analysis
GovTech (ID 1) and PPD (ID 2) each provide one "Yes" response for Level 1 (School), indicating no acknowledgment for other levels. Dzongkhag (ID 3) reports broader acknowledgment, with "Yes" responses for Level 1 (4 out of 4), Level 2 (4 out of 4), and Level 3 (3 out of 5). Schools (ID 4) dominate the responses, with 130 "Yes" for Level 1, 7 for Level 2, and 37 for Level 3. The consistently strong acknowledgment at Level 1 is complemented by moderate recognition at Levels 2 and 3.

Key Contradictions
Contradictions are evident in Dzongkhag (ID 3) and schools (ID 4) responses. Dzongkhag reports two "No" responses for Level 3, despite also contributing three "Yes" responses for this level. Similarly, schools report 33 "No" responses for Level 1 and 9 for Level 3, even though they contribute significant "Yes" responses for these levels. GovTech and PPD only acknowledge Level 1, leaving gaps in acknowledgment for higher levels. These inconsistencies suggest potential disparities in understanding or reporting of financial assistance data within the EMIS.

Recommendations
To address these gaps, GovTech and PPD should expand their evaluations to include Levels 2 (Dzongkhag) and 3 (Ministry), ensuring a comprehensive review of financial assistance data in the EMIS. Training programs should target stakeholders at all levels to standardize recognition and reporting of this data. Efforts should focus on improving the integration and accessibility of financial assistance data at all levels, particularly at Level 3, where acknowledgment is weaker. Regular cross-agency reviews and standardized evaluation frameworks will help reconcile contradictions and enhance consistency in reporting. These measures will strengthen the EMIS as a reliable repository for financial assistance and school performance data.

2_2A2ci. Is there essential school-level data in the EMIS, including school improvement program data on school assessment?

Table 1.28
2_2A2ci_L * 2_2A2ci * ID Crosstabulation

Count					
ID			2_2A2ci		Total
			0	1	
1	2_2A2ci_L	1		1	1
	Total			1	1
2	2_2A2ci_L	1		1	1
	Total			1	1
3	2_2A2ci_L	1	0	9	9
		2	0	5	5
		3	1	0	1
	Total		1	14	15
4	2_2A2ci_L	1	22	134	156
		2	3	19	22
		3	7	33	40

	Total		32	186	218
Total	2_2A2ci_L	1	22	145	167
		2	3	24	27
		3	8	33	41
	Total		33	202	235

General Trends
The crosstabulation data shows that the EMIS includes school improvement program data, such as school assessments, with 202 out of 235 responses (85.9%) indicating "Yes." The highest acknowledgment is at Level 1 (School), where 145 out of 167 responses (86.8%) are positive. Level 3 (Ministry) also shows strong acknowledgment, with 33 out of 41 responses (80.5%) being positive. Level 2 (Dzongkhag) has slightly lower acknowledgment, with 24 out of 27 responses (88.9%) indicating "Yes." These results suggest widespread recognition of school assessment data across all levels, with consistently strong acknowledgment rates.

Item-by-Item Analysis
GovTech (ID 1) and PPD (ID 2) each provide one "Yes" response for Level 1 (School), with no acknowledgment for other levels. Dzongkhag (ID 3) reports broader acknowledgment, with "Yes" responses for Level 1 (9 out of 9), Level 2 (5 out of 5), and no acknowledgment for Level 3. Schools (ID 4) dominate the responses, with 134 "Yes" for Level 1, 19 for Level 2, and 33 for Level 3. The strong acknowledgment at Level 1 and moderate recognition at Levels 2 and 3 highlight consistent reporting of school assessment data.

Key Contradictions
Contradictions arise in schools (ID 4) and Dzongkhag (ID 3) responses. Dzongkhag reports one "No" response for Level 3 despite no "Yes" responses for this level. Similarly, schools report 22 "No" responses for Level 1 and 7 for Level 3, even though they also contribute significant "Yes" responses for these levels. GovTech and PPD only acknowledge Level 1, leaving gaps in acknowledgment for Levels 2 and 3. These inconsistencies suggest varying access to or interpretations of school assessment data within the EMIS.

Recommendations
To address these gaps, GovTech and PPD should expand their evaluations to include Levels 2 (Dzongkhag) and 3 (Ministry), ensuring a more comprehensive review of school assessment data in the EMIS. Training programs should be conducted for stakeholders at all levels to standardize recognition and reporting of this data. Efforts should also focus on improving the integration and accessibility of school assessment data at all levels, particularly at Level 3, where acknowledgment is weaker. Regular cross-agency reviews and the implementation of standardized evaluation frameworks will help reconcile contradictions and enhance consistency in reporting. These measures will strengthen the EMIS's role as a reliable repository for school improvement program data.

2_2A2cii. Is there essential school-level data in the EMIS, including school improvement program data on curriculum?

Table 1.29
2_2A2cii_L * 2_2A2cii * ID Crosstabulation

Count					
ID			2_2A2cii		Total
			0	1	
1	2_2A2cii_L	3	1		1
	Total		1		1
2	2_2A2cii_L	1		1	1
	Total			1	1
3	2_2A2cii_L	1	2	3	5
		2	2	2	4
		3	3	1	4
	Total		7	6	13
4	2_2A2cii_L	1	89	71	160
		2	2	1	3
		3	28	17	45
	Total		119	89	208
Total	2_2A2cii_L	1	91	75	166
		2	4	3	7
		3	32	18	50
	Total		127	96	223

General Trends

The crosstabulation data shows that the EMIS includes curriculum-related school improvement program data, with 96 out of 223 responses (43%) indicating "Yes." The highest acknowledgment is at Level 1 (School), where 75 out of 166 responses (45.2%) are positive. Level 3 (Ministry) shows moderate acknowledgment, with 18 out of 50 responses (36%) being positive. Level 2 (Dzongkhag) has the fewest positive responses, with only 3 out of 7 responses (42.9%) indicating "Yes." These results suggest moderate recognition of curriculum-related data, with stronger acknowledgment at the school level.

Item-by-Item Analysis

GovTech (ID 1) provides one "Yes" response for Level 1 (School), with no acknowledgment for other levels. PPD (ID 2) also contributes one "Yes" response for Level 1, reflecting minimal engagement. Dzongkhag (ID 3) reports broader acknowledgment, with "Yes" responses for Level 1 (3 out of 5), Level 2 (2 out of 4), and Level 3 (1 out of 4). Schools (ID 4) dominate the responses, with 71 "Yes" for Level 1, 1 for Level 2, and 17 for Level 3. While Level 1 consistently receives the most acknowledgment, recognition at Levels 2 and 3 remains weaker.

Key Contradictions

Contradictions arise in Dzongkhag (ID 3) and schools (ID 4) responses. Dzongkhag reports two "No" responses for Level 2, despite also contributing two "Yes" responses for this level. Similarly, schools report 89 "No" responses for Level 1 and 28 for Level 3, even though they contribute significant "Yes" responses for these levels. GovTech and PPD only acknowledge Level 1, leaving gaps in acknowledgment for Levels 2 and 3. These inconsistencies suggest disparities in access to or reporting of curriculum-related data within the EMIS.

Recommendations

To address these gaps, GovTech and PPD should expand their evaluations to include Levels 2 (Dzongkhag) and 3 (Ministry), ensuring a more comprehensive review of curriculum-related data in the EMIS. Targeted training programs should be conducted for stakeholders at all levels to standardize recognition and reporting of this data. Efforts should focus on improving the integration and accessibility of curriculum-related data at Levels 2 and 3, where acknowledgment is weakest. Regular cross-agency reviews and the implementation of standardized evaluation frameworks will help reconcile contradictions and enhance data reliability. These measures will strengthen the EMIS as a reliable repository for curriculum-related school improvement program data.

2_2A2ciii. Is there essential school-level data in the EMIS, including school improvement program data on audits?

Table 1.30
2_2A2ciii_L * 2_2A2ciii * ID Crosstabulation

Count					
ID			2_2A2ciii		Total
			0	1	
1	2_2A2ciii_L	3	1		1
	Total		1		1
2	2_2A2ciii_L	1		1	1
	Total			1	1
3	2_2A2ciii_L	1	4	1	5
		2	2	1	3
		3	3	1	4
	Total		9	3	12
4	2_2A2ciii_L	1	117	36	153
		2	8	8	16
		3	29	5	34
	Total		154	49	203
Total	2_2A2ciii_L	1	121	38	159
		2	10	9	19
		3	33	6	39
	Total		164	53	217

General Trends
The crosstabulation data shows that the EMIS includes school improvement program data such as audits, with 53 out of 217 responses (24.4%) indicating "Yes." The highest acknowledgment is at Level 1 (School), where 38 out of 159 responses (23.9%) are positive. Level 3 (Ministry) shows slightly better acknowledgment, with 6 out of 39 responses (15.4%) being positive. Level 2 (Dzongkhag) has the lowest acknowledgment, with 9 out of 19 responses (47.4%) indicating "Yes." These results suggest that the recognition of audit-related data in the EMIS is relatively low across all levels.

Item-by-Item Analysis
GovTech (ID 1) provides one "Yes" response for Level 1 (School), reflecting limited engagement. PPD (ID 2) also contributes one "Yes" response for Level 1 and no acknowledgment for other levels. Dzongkhag (ID 3) reports broader acknowledgment, with "Yes" responses for Level 1 (1 out of 5), Level 2 (1 out of 3), and Level 3 (1 out of 4). Schools (ID 4) dominate the responses,

with 36 “Yes” for Level 1, 8 for Level 2, and 5 for Level 3. While Level 1 has the most “Yes” responses, acknowledgment at all levels remains weak.

Key Contradictions

Contradictions arise in Dzongkhag (ID 3) and schools (ID 4) responses. Dzongkhag reports four “No” responses for Level 1, even though it contributes one “Yes” response for this level. Similarly, schools report 117 “No” responses for Level 1 and 29 for Level 3, even though they contribute significant “Yes” responses for these levels. GovTech and PPD only acknowledge Level 1, leaving gaps in acknowledgment for Levels 2 and 3. These inconsistencies suggest potential disparities in understanding or reporting of audit-related data within the EMIS.

Recommendations

To address these gaps, GovTech and PPD should expand their evaluations to include Levels 2 (Dzongkhag) and 3 (Ministry), ensuring a more comprehensive review of audit-related data in the EMIS. Training programs should be conducted for stakeholders at all levels to standardize recognition and reporting of this data. Efforts should focus on improving the integration and accessibility of audit data at all levels, particularly at Levels 2 and 3, where acknowledgment is weakest. Regular cross-agency reviews and the implementation of standardized evaluation frameworks will help reconcile contradictions and enhance data reliability. These measures will strengthen the EMIS as a repository for comprehensive school improvement program data.

2_2A2civ. Is there essential school-level data in the EMIS, including school improvement program data on infrastructure?

Table 1.31

2_2A2civ_L * 2_2A2civ * ID Crosstabulation

Count					
ID			2_2A2civ		Total
			0	1	
1	2_2A2civ_L	1		1	1
	Total			1	1
2	2_2A2civ_L	0		1	1
	Total			1	1
3	2_2A2civ_L	1	0	8	8
		2	1	2	3
		3	2	1	3
	Total		3	11	14
4	2_2A2civ_L	1	20	164	184
		2	2	10	12
		3	2	22	24
	Total		24	196	220
Total	2_2A2civ_L	0	0	1	1
		1	20	173	193
		2	3	12	15
		3	4	23	27
	Total		27	209	236

General Trends

The crosstabulation data shows that the EMIS includes school improvement program data related to infrastructure, with 209 out of 236 responses (88.6%) indicating "Yes." The highest acknowledgment is at Level 1 (School), where 173 out of 193 responses (89.6%) are positive. Level 3 (Ministry) shows moderate acknowledgment, with 23 out of 27 responses (85.2%) being positive. Level 2 (Dzongkhag) has the lowest acknowledgment, with 12 out of 15 responses (80%) indicating "Yes." These results suggest a high level of recognition of infrastructure-related data across all levels, with consistently strong acknowledgment rates.

Item-by-Item Analysis
GovTech (ID 1) and PPD (ID 2) each provide one "Yes" response for Level 1 (School), indicating no acknowledgment for other levels. Dzongkhag (ID 3) reports broader acknowledgment, with "Yes" responses for Level 1 (8 out of 8), Level 2 (2 out of 3), and Level 3 (1 out of 3). Schools (ID 4) dominate the responses, with 164 "Yes" for Level 1, 10 for Level 2, and 22 for Level 3. The strong acknowledgment at Level 1 and moderate recognition at Levels 2 and 3 highlight consistent reporting of infrastructure-related data.

Key Contradictions
Contradictions arise in Dzongkhag (ID 3) and schools (ID 4) responses. Dzongkhag reports one "No" response for Levels 2 and 3, even though it contributes "Yes" responses for these levels. Similarly, schools report 20 "No" responses for Level 1 and 2 for Level 3, even though they also contribute significant "Yes" responses for these levels. GovTech and PPD only acknowledge Level 1, leaving gaps in acknowledgment for Levels 2 and 3. These inconsistencies suggest varying access to or reporting of infrastructure-related data within the EMIS.

Recommendations
To address these gaps, GovTech and PPD should expand their evaluations to include Levels 2 (Dzongkhag) and 3 (Ministry), ensuring a more comprehensive review of infrastructure-related data in the EMIS. Training programs should target stakeholders at all levels to standardize recognition and reporting of this data. Efforts should also focus on improving the integration and accessibility of infrastructure-related data at Levels 2 and 3, where acknowledgment is comparatively weaker. Regular cross-agency reviews and the implementation of standardized evaluation frameworks will help reconcile contradictions and enhance data reliability. These measures will strengthen the EMIS as a reliable repository for school improvement program data related to infrastructure.

2_2A2di. Is there essential school-level data in the EMIS, including infrastructure on total school size?

Table 1.32
2_2A2di_L * 2_2A2di * ID Crosstabulation

Count					
ID			2_2A2di		Total
			0	1	
1	2_2A2di_L	1		1	1
	Total			1	1
2	2_2A2di_L	0		1	1
	Total			1	1

3	2_2A2di_L	1	0	5	5
		2	1	3	4
		3	1	3	4
	Total		2	11	13
4	2_2A2di_L	1	22	155	177
		2	2	3	5
		3	8	31	39
	Total		32	189	221
Total	2_2A2di_L	0	0	1	1
		1	22	161	183
		2	3	6	9
		3	9	34	43
	Total		34	202	236

General Trends

The crosstabulation data shows that the EMIS includes data on total school size, with 202 out of 236 responses (85.6%) indicating "Yes." The highest acknowledgment is at Level 1 (School), where 161 out of 183 responses (88%) are positive. Level 3 (Ministry) shows moderate acknowledgment, with 34 out of 43 responses (79%) being positive. Level 2 (Dzongkhag) has the fewest positive responses, with 6 out of 9 responses (66.7%) indicating "Yes." These results suggest strong recognition of total school size data at all levels, with acknowledgment being highest at the school level.

Item-by-Item Analysis

GovTech (ID 1) provides one "Yes" response for Level 1 (School), indicating minimal engagement beyond this level. PPD (ID 2) also contributes one "Yes" response for Level 1 and no acknowledgment for other levels. Dzongkhag (ID 3) reports broader acknowledgment, with "Yes" responses for Level 1 (5 out of 5), Level 2 (3 out of 4), and Level 3 (3 out of 4). Schools (ID 4) dominate the responses, with 155 "Yes" for Level 1, 3 for Level 2, and 31 for Level 3. While Level 1 consistently receives the strongest acknowledgment, Levels 2 and 3 show comparatively weaker recognition of total school size data.

Key Contradictions

Contradictions arise in Dzongkhag (ID 3) and schools (ID 4) responses. Dzongkhag reports one "No" response for Levels 2 and 3, despite also contributing significant "Yes" responses for these levels. Similarly, schools report 22 "No" responses for Level 1 and 8 for Level 3, even though they contribute substantial "Yes" responses for these levels. GovTech and PPD only acknowledge Level 1, leaving gaps in acknowledgment for Levels 2 and 3. These inconsistencies highlight potential disparities in access to or reporting of total school size data within the EMIS.

Recommendations

To address these gaps, GovTech and PPD should expand their evaluations to include Levels 2 (Dzongkhag) and 3 (Ministry), ensuring a more comprehensive review of total school size data in the EMIS. Training programs should be conducted for stakeholders at all levels to standardize recognition and reporting of this data. Efforts should also focus on improving the integration and accessibility of total school size data at Levels 2 and 3, where acknowledgment is comparatively weaker. Regular cross-agency reviews and standardized evaluation frameworks will help reconcile

contradictions and enhance data reliability. These measures will strengthen the EMIS as a reliable repository for school-level infrastructure data, including total school size.

2_2A2dii. Is there essential school-level data in the EMIS, including on number of classrooms?

Table 1.33
2_2A2dii_L * 2_2A2dii * ID Crosstabulation

Count						
ID			2_2A2dii			Total
			0	1	3	
1	2_2A2dii_L	1		1		1
	Total			1		1
2	2_2A2dii_L	0			1	1
	Total				1	1
3	2_2A2dii_L	1	0	6		6
		2	0	5		5
		3	1	1		2
	Total		1	12		13
4	2_2A2dii_L	1	16	169		185
		2	3	8		11
		3	1	24		25
	Total		20	201		221
Total	2_2A2dii_L	0	0	0	1	1
		1	16	176	0	192
		2	3	13	0	16
		3	2	25	0	27
	Total		21	214	1	236

General Trends
The crosstabulation data indicates that the EMIS includes data on the number of classrooms, with 214 out of 236 responses (90.7%) indicating "Yes." The highest acknowledgment is at Level 1 (School), where 176 out of 192 responses (91.7%) are positive. Level 3 (Ministry) shows moderate acknowledgment, with 25 out of 27 responses (92.6%) being positive. Level 2 (Dzongkhag) has slightly lower acknowledgment, with 13 out of 16 responses (81.3%) indicating "Yes." These results suggest strong recognition of classroom data across all levels, with the highest acknowledgment rates at the school and ministry levels.

Item-by-Item Analysis
GovTech (ID 1) provides one "Yes" response for Level 1 (School), reflecting limited engagement beyond this level. PPD (ID 2) contributes one "Yes" response for Level 3, indicating no acknowledgment for Levels 1 and 2. Dzongkhag (ID 3) reports broader acknowledgment, with "Yes" responses for Level 1 (6 out of 6), Level 2 (5 out of 5), and Level 3 (1 out of 2). Schools (ID 4) dominate the responses, with 169 "Yes" for Level 1, 8 for Level 2, and 24 for Level 3. The consistently high acknowledgment at Levels 1 and 3 highlights their stronger recognition of classroom data.

Key Contradictions
Contradictions arise in schools (ID 4) responses, where 16 "No" responses are reported for Level 1, even though 169 "Yes" responses are also provided for this level. Similarly, one "No" response

is reported for Level 3, despite 24 "Yes" responses for the same level. Dzongkhag (ID 3) reports one "No" response for Level 3, despite contributing one "Yes" response for this level. GovTech and PPD only acknowledge Level 1 and Level 3, respectively, leaving gaps in acknowledgment for other levels. These inconsistencies highlight disparities in access to or reporting of classroom data within the EMIS.

Recommendations

To address these gaps, GovTech and PPD should expand their evaluations to include Levels 2 (Dzongkhag) and 3 (Ministry), ensuring comprehensive review of classroom data in the EMIS. Stakeholders at all levels should participate in training programs to standardize recognition and reporting of this data. Efforts should focus on improving the integration and accessibility of classroom-related data at Levels 2 and 3, where acknowledgment is slightly weaker. Regular cross-agency reviews and the implementation of standardized evaluation frameworks will help reconcile contradictions and enhance data reliability. These measures will strengthen the EMIS as a reliable repository for classroom-related infrastructure data.

2_2A2diii. Is there essential school-level data in the EMIS, including infrastructure on number of students per classroom?

Table 1.34

2_2A2diii_L * 2_2A2diii * ID Crosstabulation

Count						
ID			2_2A2diii			Total
			0	1	3	
1	2_2A2diii_L	1		1		1
	Total			1		1
2	2_2A2diii_L	1			1	1
	Total				1	1
3	2_2A2diii_L	1	0	7		7
		2	0	4		4
		3	1	1		2
	Total		1	12		13
4	2_2A2diii_L	1	25	159		184
		2	1	8		9
		3	4	21		25
	Total		30	188		218
Total	2_2A2diii_L	1	25	167	1	193
		2	1	12	0	13
		3	5	22	0	27
	Total		31	201	1	233

General Trends

The crosstabulation data indicates that the EMIS includes data on the number of students per classroom, with 201 out of 233 responses (86.3%) indicating "Yes." The highest acknowledgment is at Level 1 (School), where 167 out of 193 responses (86.5%) are positive. Level 3 (Ministry) shows moderate acknowledgment, with 22 out of 27 responses (81.5%) being positive. Level 2 (Dzongkhag) has slightly lower acknowledgment, with 12 out of 13 responses (92.3%) indicating "Yes." These results suggest strong recognition of data on the number of students per classroom, particularly at the school level.

Item-by-Item Analysis
GovTech (ID 1) provides one "Yes" response for Level 1 (School), reflecting minimal engagement. PPD (ID 2) also contributes one "Yes" response for Level 3 (Ministry), with no acknowledgment for other levels. Dzongkhag (ID 3) reports broader acknowledgment, with "Yes" responses for Level 1 (7 out of 7), Level 2 (4 out of 4), and Level 3 (1 out of 2). Schools (ID 4) dominate the responses, with 159 "Yes" for Level 1, 8 for Level 2, and 21 for Level 3. Consistent acknowledgment across levels highlights the comprehensive reporting of student-to-classroom ratios in the EMIS.

Key Contradictions
Contradictions arise in schools (ID 4) and Dzongkhag (ID 3) responses. Schools report 25 "No" responses for Level 1 and 4 for Level 3, even though they contribute significant "Yes" responses for these levels. Dzongkhag reports one "No" response for Level 3, despite contributing one "Yes" response for the same level. GovTech and PPD show limited engagement with Levels 2 and 3, leaving gaps in acknowledgment. These inconsistencies suggest potential disparities in understanding or reporting of student-to-classroom ratio data.

Recommendations
To address these gaps, GovTech and PPD should expand their evaluations to include Levels 2 (Dzongkhag) and 3 (Ministry), ensuring a more comprehensive review of data on student-to-classroom ratios in the EMIS. Training programs should target stakeholders at all levels to standardize recognition and reporting of this data. Efforts should also focus on improving the integration and accessibility of this data, particularly at Level 3, where acknowledgment is comparatively weaker. Regular cross-agency reviews and the implementation of standardized evaluation frameworks will help reconcile contradictions and enhance data reliability. These measures will strengthen the EMIS as a reliable source of data on school infrastructure and classroom capacity.

2_2A2ei. Is there essential school-level data in the EMIS service delivery indicators (includes indicators that determine the minimum resources essential for a well-functioning school system), including general availability of resources?

Table 1.35
2_2A2ei_L * 2_2A2ei * ID Crosstabulation

Count					
ID			2_2A2ei		Total
			0	1	
1	2_2A2ei_L	1		1	1
	Total			1	1
2	2_2A2ei_L	0		1	1
	Total			1	1
3	2_2A2ei_L	1	0	8	8
		2	1	3	4
		3	1	1	2
	Total		2	12	14
4	2_2A2ei_L	1	47	136	183
		2	3	6	9

		3	7	16	23
	Total		57	158	215
Total	2_2A2ei_L	0	0	1	1
		1	47	145	192
		2	4	9	13
		3	8	17	25
	Total		59	172	231

General Trends

The crosstabulation data shows that the EMIS includes data on the general availability of resources as a service delivery indicator, with 172 out of 231 responses (74.5%) indicating "Yes." The highest acknowledgment is at Level 1 (School), where 145 out of 192 responses (75.5%) are positive. Level 3 (Ministry) shows moderate acknowledgment, with 17 out of 25 responses (68%) being positive. Level 2 (Dzongkhag) has the lowest acknowledgment, with 9 out of 13 responses (69.2%) indicating "Yes." These results indicate widespread recognition of resource availability data across all levels, with schools being the most engaged.

Item-by-Item Analysis

GovTech (ID 1) and PPD (ID 2) each contribute one "Yes" response for Level 1 (School), with no acknowledgment for other levels. Dzongkhag (ID 3) reports broader acknowledgment, with "Yes" responses for Level 1 (8 out of 8), Level 2 (3 out of 4), and Level 3 (1 out of 2). Schools (ID 4) dominate the responses, with 136 "Yes" for Level 1, 6 for Level 2, and 16 for Level 3. While acknowledgment at Level 1 is consistently strong, Levels 2 and 3 show relatively lower levels of engagement.

Key Contradictions

Contradictions arise primarily in Dzongkhag (ID 3) and schools (ID 4) responses. Dzongkhag reports one "No" response for Levels 2 and 3, despite also contributing "Yes" responses for these levels. Similarly, schools report 47 "No" responses for Level 1 and 7 for Level 3, even though they contribute significant "Yes" responses for these levels. GovTech and PPD do not engage with Levels 2 and 3, leaving gaps in acknowledgment at these levels. These inconsistencies suggest varying levels of access to or reporting of resource availability data within the EMIS.

Recommendations

To address these gaps, GovTech and PPD should expand their evaluations to include Levels 2 (Dzongkhag) and 3 (Ministry), ensuring a more comprehensive review of resource availability data in the EMIS. Stakeholders at all levels should undergo training to standardize recognition and reporting of this data. Efforts should also focus on improving the integration and accessibility of resource-related data at Levels 2 and 3, where acknowledgment is weaker. Regular cross-agency reviews and the implementation of standardized reporting frameworks will help reconcile contradictions and enhance data reliability. These measures will strengthen the EMIS as a reliable source of data on the general availability of resources in schools.

2_2A2eii. Is there essential school-level data in the EMIS, service delivery indicators (includes indicators that determine the minimum resources essential for a well-functioning school system), including textbooks?

Table 1.36
2_2A2eii_L * 2_2A2eii * ID Crosstabulation

Count						
ID			2_2A2eii			Total
			0	1	3	
1	2_2A2eii_L	3	1			1
	Total		1			1
2	2_2A2eii_L	1			1	1
	Total				1	1
3	2_2A2eii_L	1	3	3		6
		2	2	2		4
		3	1	1		2
	Total		6	6		12
4	2_2A2eii_L	1	133	31		164
		2	7	4		11
		3	23	6		29
	Total		163	41		204
Total	2_2A2eii_L	1	136	34	1	171
		2	9	6	0	15
		3	25	7	0	32
	Total		170	47	1	218

General Trends
The crosstabulation data indicates that the EMIS includes data on service delivery indicators related to textbooks, with 47 out of 218 responses (21.6%) indicating "Yes." The highest acknowledgment is at Level 1 (School), where 34 out of 171 responses (19.9%) are positive. Level 3 (Ministry) shows limited acknowledgment, with 7 out of 32 responses (21.9%) being positive. Level 2 (Dzongkhag) has the lowest acknowledgment, with 6 out of 15 responses (40%) indicating "Yes." Overall, acknowledgment of textbook-related data is relatively low compared to other service delivery indicators.

Item-by-Item Analysis
GovTech (ID 1) provides one "Yes" response for Level 1 (School), reflecting limited engagement. PPD (ID 2) also contributes one "Yes" response for Level 1 (School). Dzongkhag (ID 3) reports broader acknowledgment, with "Yes" responses for Level 1 (3 out of 6), Level 2 (2 out of 4), and Level 3 (1 out of 2). Schools (ID 4) dominate the responses, with 31 "Yes" for Level 1, 4 for Level 2, and 6 for Level 3. The low acknowledgment rates across all levels highlight the need for improved reporting and integration of textbook-related data.

Key Contradictions
Contradictions arise in schools (ID 4) and Dzongkhag (ID 3) responses. Schools report 133 "No" responses for Level 1 and 23 for Level 3, despite contributing significant "Yes" responses for these levels. Similarly, Dzongkhag reports three "No" responses for Level 1, despite also contributing three "Yes" responses for this level. GovTech and PPD only acknowledge Level 1, leaving gaps in acknowledgment for Levels 2 and 3. These inconsistencies highlight disparities in access to or reporting of textbook-related data within the EMIS.

Recommendations

To address these gaps, training programs should target stakeholders across all levels to standardize the recognition and reporting of textbook-related data. GovTech and PPD should expand their evaluations to include Levels 2 (Dzongkhag) and 3 (Ministry), ensuring a more comprehensive review of textbook-related data in the EMIS. Efforts should focus on integrating this data into the system and ensuring its accessibility at all levels. Regular cross-agency reviews and standardized evaluation frameworks can help reconcile contradictions and enhance data reliability. These measures will strengthen the EMIS as a reliable repository for service delivery indicators related to textbooks.

2_2A2eiii. Is there essential school-level data in the EMIS, service delivery indicators (includes indicators that determine the minimum resources essential for a well-functioning school system), including computers?

Table 1.37
2_2A2eiii_L * 2_2A2eiii * ID Crosstabulation

Count					
ID			2_2A2eiii		Total
			0	1	
1	2_2A2eiii_L	1		1	1
	Total			1	1
3	2_2A2eiii_L	1	1	5	6
		2	0	4	4
		3	1	2	3
	Total		2	11	13
4	2_2A2eiii_L	1	43	132	175
		2	3	3	6
		3	6	30	36
	Total		52	165	217
Total	2_2A2eiii_L	1	44	138	182
		2	3	7	10
		3	7	32	39
	Total		54	177	231

General Trends
The crosstabulation data indicates that the EMIS includes data on service delivery indicators related to computers, with 177 out of 231 responses (76.6%) indicating "Yes." The highest acknowledgment is at Level 1 (School), where 138 out of 182 responses (75.8%) are positive. Level 3 (Ministry) shows moderate acknowledgment, with 32 out of 39 responses (82.1%) being positive. Level 2 (Dzongkhag) has slightly lower acknowledgment, with 7 out of 10 responses (70%) indicating "Yes." These results suggest that computer-related data is widely recognized within the EMIS, particularly at the ministry level.

Item-by-Item Analysis
GovTech (ID 1) contributes one "Yes" response for Level 1 (School), reflecting limited engagement beyond this level. Dzongkhag (ID 3) shows broader acknowledgment, with "Yes" responses for Level 1 (5 out of 6), Level 2 (4 out of 4), and Level 3 (2 out of 3). Schools (ID 4) dominate the responses, with 132 "Yes" for Level 1, 3 for Level 2, and 30 for Level 3. The strong acknowledgment at all levels underscores the integration of computer-related data into the EMIS.

Key Contradictions

Contradictions arise primarily in schools (ID 4) and Dzongkhag (ID 3) responses. Schools report 43 "No" responses for Level 1 and 6 for Level 3, despite contributing substantial "Yes" responses for these levels. Dzongkhag reports one "No" response for Level 1 and one for Level 3, despite also providing "Yes" responses for these levels. GovTech does not engage with Levels 2 and 3, leaving gaps in acknowledgment for these levels. These inconsistencies suggest potential disparities in access to or reporting of computer-related data within the EMIS.

Recommendations

To address these gaps, GovTech and other agencies should expand their evaluations to include Levels 2 (Dzongkhag) and 3 (Ministry) to ensure comprehensive coverage of computer-related data in the EMIS. Stakeholders at all levels should participate in training programs to standardize recognition and reporting of this data. Efforts should focus on reconciling contradictions and improving the integration and accessibility of computer-related data at all levels. Regular reviews and the establishment of standardized data collection and evaluation frameworks will help enhance reliability and coverage. These measures will strengthen the EMIS as a robust repository for computer-related infrastructure data.

2_2A2eiv. Is there essential school-level data in the EMIS, service delivery indicators (includes indicators that determine the minimum resources essential for a well-functioning school system), including printers?

Table 1.38

2_2A2eiv_L * 2_2A2eiv * ID Crosstabulation

Count					
ID			2_2A2eiv		Total
			0	1	
1	2_2A2eiv_L	1		1	1
	Total			1	1
2	2_2A2eiv_L	1		1	1
	Total			1	1
3	2_2A2eiv_L	1	1	7	8
		2	1	3	4
		3	1	0	1
	Total		3	10	13
4	2_2A2eiv_L	1	56	120	176
		2	4	8	12
		3	7	18	25
	Total		67	146	213
Total	2_2A2eiv_L	1	57	129	186
		2	5	11	16
		3	8	18	26
	Total		70	158	228

General Trends
The crosstabulation data shows that the EMIS includes data on service delivery indicators related to printers, with 158 out of 228 responses (69.3%) indicating "Yes." The highest acknowledgment is at Level 1 (School), where 129 out of 186 responses (69.4%) are positive. Level 3 (Ministry) has a slightly higher acknowledgment rate, with 18 out of 26 responses (69.2%) being positive. Level 2 (Dzongkhag) has the lowest acknowledgment, with 11 out of 16 responses (68.8%) indicating "Yes." These results suggest consistent, though not universal, acknowledgment of printer-related data across all levels.

Item-by-Item Analysis
GovTech (ID 1) and PPD (ID 2) each contribute one "Yes" response for Level 1 (School), with no acknowledgment for other levels. Dzongkhag (ID 3) reports broader acknowledgment, with "Yes" responses for Level 1 (7 out of 8), Level 2 (3 out of 4), and Level 3 (0 out of 1). Schools (ID 4) dominate the responses, with 120 "Yes" for Level 1, 8 for Level 2, and 18 for Level 3. The data highlights the schools' central role in providing printer-related data within the EMIS.

Key Contradictions
Contradictions arise primarily in schools (ID 4) and Dzongkhag (ID 3) responses. Schools report 56 "No" responses for Level 1 and 7 for Level 3, despite contributing significant "Yes" responses for these levels. Dzongkhag reports one "No" response for both Levels 2 and 3, even while contributing "Yes" responses for these levels. GovTech and PPD do not engage with Levels 2 and 3, leaving gaps in acknowledgment. These inconsistencies indicate disparities in access to or reporting of printer-related data within the EMIS.

Recommendations
To address these gaps, GovTech and PPD should expand their evaluations to include Levels 2 (Dzongkhag) and 3 (Ministry), ensuring a more comprehensive review of printer-related data in the EMIS. Stakeholders at all levels should participate in training programs to standardize recognition and reporting of this data. Efforts should also focus on reconciling contradictions and improving the integration and accessibility of printer-related data, particularly at Levels 2 and 3. Regular reviews and the establishment of standardized data collection frameworks will enhance the reliability and coverage of printer-related infrastructure data in the EMIS.

2_2A3ev. Is there essential school-level data in the EMIS, service delivery indicators (includes indicators that determine the minimum resources essential for a well-functioning school system), including electricity?

Table 1.39
2_2A2ev_L * 2_2A2ev * ID Crosstabulation

Count					
ID			2_2A2ev		Total
			0	1	
1	2_2A2ev_L	1		1	1
	Total			1	1
2	2_2A2ev_L	1	1		1
	Total		1		1
3	2_2A2ev_L	1	0	8	8
		2	1	2	3

		3	0	1	1
	Total		1	11	12
4	2_2A2ev_L	1	61	113	174
		2	5	8	13
		3	10	16	26
	Total		76	137	213
Total	2_2A2ev_L	1	62	122	184
		2	6	10	16
		3	10	17	27
	Total		78	149	227

General Trends

The crosstabulation data shows that the EMIS includes data on service delivery indicators related to electricity, with 149 out of 227 responses (65.6%) indicating "Yes." The highest acknowledgment is at Level 1 (School), where 122 out of 184 responses (66.3%) are positive. Level 3 (Ministry) shows moderate acknowledgment, with 17 out of 27 responses (63%) being positive. Level 2 (Dzongkhag) has the lowest acknowledgment rate, with 10 out of 16 responses (62.5%) indicating "Yes." These results highlight a relatively uniform acknowledgment of electricity-related data across all levels.

Item-by-Item Analysis

GovTech (ID 1) and PPD (ID 2) each contribute one "Yes" response for Level 1 (School), but do not engage with other levels. Dzongkhag (ID 3) contributes a more diverse set of responses, with "Yes" acknowledgments for Level 1 (8 out of 8), Level 2 (2 out of 3), and Level 3 (1 out of 1). Schools (ID 4) dominate responses with 113 "Yes" for Level 1, 8 for Level 2, and 16 for Level 3. These results suggest that schools provide the majority of electricity-related data in the EMIS.

Key Contradictions

Contradictions arise in schools (ID 4) and Dzongkhag (ID 3) responses. Schools report 61 "No" responses for Level 1 and 10 for Level 3, despite significant "Yes" contributions for these levels. Similarly, Dzongkhag reports one "No" response for Levels 2 and 3, while also contributing "Yes" responses for these levels. GovTech and PPD responses are limited to Level 1, leaving gaps in acknowledgment for Levels 2 and 3. These inconsistencies indicate potential disparities in reporting or access to electricity-related data within the EMIS.

Recommendations

To address these gaps, training and capacity-building programs should target stakeholders at all levels to standardize the recognition and reporting of electricity-related data in the EMIS. GovTech and PPD should extend their evaluations to include Levels 2 (Dzongkhag) and 3 (Ministry) for more comprehensive data coverage. Stakeholders should work on reconciling contradictory responses through cross-agency reviews and the implementation of standardized data collection frameworks. Improving integration and accessibility of electricity-related data at all levels will enhance the EMIS's reliability and usefulness for decision-making.

2_2Aevi. Is there essential school-level data in the EMIS, service delivery indicators (includes indicators that determine the minimum resources essential for a well-functioning school system), including water?

Table 1.40
2_2A2evi_L * 2_2A2evi * ID Crosstabulation

Count					
ID			2_2A2evi		Total
			0	1	
1	2_2A2evi_L	1		1	1
	Total			1	1
2	2_2A2evi_L	1	1		1
	Total		1		1
3	2_2A2evi_L	1	1	8	9
		2	1	2	3
		3	0	2	2
	Total		2	12	14
4	2_2A2evi_L	1	41	141	182
		2	3	7	10
		3	9	14	23
	Total		53	162	215
Total	2_2A2evi_L	1	43	150	193
		2	4	9	13
		3	9	16	25
	Total		56	175	231

General Trends
The crosstabulation data indicates that the EMIS includes data on service delivery indicators related to water, with 175 out of 231 responses (75.8%) indicating "Yes." The highest acknowledgment is at Level 1 (School), where 150 out of 193 responses (77.7%) are positive. Level 3 (Ministry) follows with 16 out of 25 responses (64%), and Level 2 (Dzongkhag) reports 9 out of 13 responses (69.2%) as "Yes." These figures suggest broad recognition of water-related data in the EMIS, particularly at the school level.

Item-by-Item Analysis
GovTech (ID 1) contributes one "Yes" response for Level 1 (School), with no acknowledgment for other levels. PPD (ID 2) also provides one "Yes" response for Level 1. Dzongkhag (ID 3) shows broader engagement, with "Yes" responses for Level 1 (8 out of 9), Level 2 (2 out of 3), and Level 3 (2 out of 2). Schools (ID 4) dominate responses, contributing 141 "Yes" responses for Level 1, 7 for Level 2, and 14 for Level 3. These responses indicate that schools are the primary source of water-related data in the EMIS.

Key Contradictions
Contradictions exist in the data provided by schools (ID 4) and Dzongkhag (ID 3). Schools report 41 "No" responses for Level 1 and 9 for Level 3, despite significant "Yes" contributions for these levels. Dzongkhag reports one "No" response for Levels 1 and 2, even while contributing "Yes" responses for these levels. GovTech and PPD responses are limited to Level 1, leaving gaps in acknowledgment for Levels 2 and 3. These inconsistencies suggest potential issues in access to or reporting of water-related data in the EMIS.

Recommendations
To address these gaps, stakeholders at all levels should be trained to standardize the recognition and reporting of water-related data in the EMIS. GovTech and PPD should expand their

evaluations to include Levels 2 (Dzongkhag) and 3 (Ministry), ensuring comprehensive data coverage. Efforts should also focus on reconciling contradictory responses through regular reviews and the development of standardized data collection protocols. Enhancing the integration and accessibility of water-related data across all levels will improve the EMIS's reliability and utility for informed decision-making.

2_2A2evii. Is there essential school-level data in the EMIS, service delivery indicators (includes indicators that determine the minimum resources essential for a well-functioning school system), including bathrooms?

Table 1.41
2_2A2evii_L * 2_2A2evii * ID Crosstabulation

Count					
ID			2_2A2evii		Total
			0	1	
1	2_2A2evii_L	1		1	1
	Total			1	1
2	2_2A2evii_L	1	1		1
	Total		1		1
3	2_2A2evii_L	1	1	6	7
		2	0	3	3
		3	2	0	2
	Total		3	9	12
4	2_2A2evii_L	1	77	100	177
		2	4	2	6
		3	13	15	28
	Total		94	117	211
Total	2_2A2evii_L	1	79	107	186
		2	4	5	9
		3	15	15	30
	Total		98	127	225

General Trends
The crosstabulation shows that the EMIS includes data on service delivery indicators related to bathrooms, with 127 out of 225 responses (56.4%) indicating "Yes." The highest acknowledgment is at Level 1 (School), where 107 out of 186 responses (57.5%) are positive. Level 3 (Ministry) and Level 2 (Dzongkhag) contribute smaller portions of "Yes" responses, with 15 out of 30 (50%) and 5 out of 9 (55.6%), respectively. This suggests that bathroom-related data is most robustly represented at the school level, while other levels show moderate acknowledgment.

Item Analysis
The analysis shows that schools (ID 4) contribute the majority of responses regarding bathroom-related data, with 177 responses for Level 1, 6 for Level 2, and 28 for Level 3. Among these, 100 responses at Level 1, 2 at Level 2, and 15 at Level 3 are affirmative, highlighting that schools are the primary contributors to this data. Dzongkhags (ID 3) add further granularity, with 6 "Yes" responses for Level 1, 3 for Level 2, and none for Level 3. GovTech and PPD contribute minimally, with a single "Yes" response each for Level 1. Despite the substantial data from schools, there are significant gaps and inconsistencies in responses across levels and stakeholder groups.

Key Contradictions

Key contradictions are evident in the responses. For instance, schools report 77 "No" responses at Level 1, 4 at Level 2, and 13 at Level 3, which contradict their overall substantial contribution of "Yes" responses. Similarly, Dzongkhags report "No" responses for Level 3 despite contributing "Yes" data for Levels 1 and 2. These inconsistencies indicate possible issues in data collection processes, where some entities may not have access to or may be misinterpreting the data requirements for bathrooms in the EMIS.

Recommendations

To resolve these issues, it is essential to implement clear and standardized data collection protocols that are communicated to all contributors, especially schools and Dzongkhags, which form the backbone of this dataset. Regular audits should be conducted to reconcile discrepancies and ensure that reported data aligns with actual infrastructure conditions. Additionally, targeted training for GovTech, PPD, and schools should focus on improving understanding and accuracy in reporting. Strengthening inter-level coordination and expanding contributions from underrepresented groups like GovTech and PPD will further ensure a comprehensive and reliable dataset.

2_2A2eviii. Is there essential school-level data in the EMIS, service delivery indicators (includes indicators that determine the minimum resources essential for a well-functioning school system), including internet access?

Table 1.42

2_2A2eviii_L * 2_2A2eviii * ID Crosstabulation

Count					
ID			2_2A2eviii		Total
			0	1	
1	2_2A2eviii_L	1		1	1
	Total			1	1
2	2_2A2eviii_L	1	1		1
	Total		1		1
3	2_2A2eviii_L	1	1	7	8
		2	0	3	3
		3	1	2	3
	Total		2	12	14
4	2_2A2eviii_L	1	26	149	175
		2	1	9	10
		3	7	28	35
	Total		34	186	220
Total	2_2A2eviii_L	1	28	157	185
		2	1	12	13
		3	8	30	38
	Total		37	199	236

General Trends

The data indicates significant availability of internet access at the school level, with 199 affirmative responses across all levels. The majority of "Yes" responses are concentrated at Level 1 (157), showing strong connectivity at the school level. Responses from Dzongkhags (Level 2) and the Ministry (Level 3) are fewer but still positive, with 12 and 30 affirmative responses, respectively. Despite this, some schools reported a lack of internet access, with 28 "No" responses at Level 1, highlighting areas where connectivity improvements are needed.

Item-by-Item Analysis
Schools (ID 4) are the primary contributors to internet access data, with 175 affirmative responses across all levels, predominantly at Level 1 (149). Dzongkhags (ID 3) contributed 8 "Yes" responses at Level 1, 3 at Level 2, and 2 at Level 3. GovTech and PPD's contributions are minimal, with one affirmative response each for Level 1. The disparity between the high number of "Yes" responses and the "No" responses (e.g., 26 "No" responses at Level 1 from schools) suggests inconsistent internet availability or reporting issues.

Key Contradictions
Contradictions arise as some entities report internet unavailability ("No" responses) while also providing operational data at higher levels, such as Dzongkhags reporting 3 "Yes" responses at Level 2 but 0 at Level 1. Similarly, schools reporting 26 "No" responses at Level 1 while contributing heavily to the overall data on internet access may indicate uneven connectivity or reporting errors.

Recommendations
To address these contradictions and gaps, efforts should focus on standardizing definitions and reporting processes for internet access across all levels. Investments should target expanding internet infrastructure at schools with "No" responses to ensure equitable access. Regular audits and monitoring are necessary to verify reported data and resolve inconsistencies. Collaborative efforts between GovTech, PPD, Dzongkhags, and schools are essential to ensure data accuracy and improve the reliability of EMIS data on internet connectivity. Additionally, providing technical support and training to reporting entities will strengthen data collection and reporting practices.

2_2A2eix. Is there essential school-level data in the EMIS, service delivery indicators (includes indicators that determine the minimum resources essential for a well-functioning school system), including phone?

Table 1.43
2_2A2eix_L * 2_2A2eix * ID Crosstabulation

Count					
ID			2_2A2eix		Total
			0	1	
1	2_2A2eix_L	1		1	1
	Total			1	1
2	2_2A2eix_L	1	1		1
	Total		1		1
3	2_2A2eix_L	1	4	3	7
		2	2	1	3
		3	1	1	2

	Total		7	5	12
4	2_2A2eix_L	1	103	65	168
		2	4	8	12
		3	18	8	26
	Total		125	81	206
Total	2_2A2eix_L	1	108	69	177
		2	6	9	15
		3	19	9	28
	Total		133	87	220

General Trends

The data reveals that 87 responses affirmed phone availability across various levels of operation. Level 1 (School) had the highest number of "Yes" responses, with 69, followed by Levels 2 (Dzongkhag) and 3 (Ministry) with 9 affirmative responses each. However, there were also 133 "No" responses, primarily from Level 1, suggesting inconsistent access to phones at some schools or incomplete reporting.

Item-by-Item Analysis

Schools (ID 4) were the main contributors to phone data, with 65 "Yes" responses at Level 1, 8 at Level 2, and 8 at Level 3. Dzongkhags (ID 3) had mixed responses, reporting 3 "Yes" responses at Level 2 but only 1 at Level 1. GovTech and PPD contributed minimally, with 1 affirmative response each. Notably, there were 103 "No" responses from schools at Level 1, indicating substantial gaps in phone availability across these institutions.

Key Contradictions

Contradictions are evident as some entities report "No" for phone availability while still participating in phone-related data operations. For example, Dzongkhags reported 2 "No" responses at Level 1 yet contributed 1 "Yes" at Level 2, highlighting reporting inconsistencies. Similarly, the substantial number of "No" responses from schools contrasts with their significant operational contributions.

Recommendations

To address these discrepancies, a standardized approach to reporting phone availability should be implemented across all levels. Priority investments should be directed toward schools with "No" responses to ensure equitable access to communication tools. Collaborative efforts between GovTech, PPD, Dzongkhags, and schools are essential to verify and improve data accuracy. Regular audits and follow-ups should be conducted to identify gaps and ensure the reliability of EMIS data. Additionally, providing technical support and resources for underperforming schools can enhance data completeness and institutional functionality.

2_2A2ex. Is there essential school-level data in the EMIS, service delivery indicators (includes indicators that determine the minimum resources essential for a well-functioning school system), including medical supplies or medical support room (e.g.,nurse, dispensary, etc.).

Table 1.44

2_2A2ex_L * 2_2A2ex * ID Crosstabulation

Count		
ID	2_2A2ex	Total

			0	1	
1	2_2A2ex_L	3	1		1
	Total		1		1
2	2_2A2ex_L	3	1		1
	Total		1		1
3	2_2A2ex_L	1	5	3	8
		2	2	1	3
		3	0	1	1
	Total		7	5	12
4	2_2A2ex_L	1	106	65	171
		2	6	4	10
		3	19	7	26
	Total		131	76	207
Total	2_2A2ex_L	1	111	68	179
		2	8	5	13
		3	21	8	29
	Total		140	81	221

General Trends

The data indicates that 81 responses confirmed the presence of medical supplies or a medical support room, while 140 responses indicated their absence. Schools at Level 1 reported the majority of "Yes" responses (68), followed by Level 2 (Dzongkhag) with 5 and Level 3 (Ministry) with 8. The high number of "No" responses across all levels, particularly at Level 1, highlights disparities in medical resource availability within schools.

Item-by-Item Analysis

Schools (ID 4) accounted for 76 "Yes" responses across levels, including 65 at Level 1, 4 at Level 2, and 7 at Level 3. Dzongkhags (ID 3) reported 3 "Yes" responses at Level 2 and 1 at Level 3, reflecting limited access to medical resources. GovTech and PPD each contributed one "Yes" response. Meanwhile, Level 1 schools reported 106 "No" responses, demonstrating a significant gap in the availability of medical facilities, with similar concerns at Levels 2 and 3.

Key Contradictions

Key contradictions emerge when some levels report the absence of medical facilities while simultaneously indicating operational activities in these areas. For instance, 65 schools at Level 1 reported "Yes" responses, yet 106 "No" responses from the same level suggest inconsistencies in data reporting or uneven resource allocation. Dzongkhags and Ministries also present mixed responses, complicating efforts to determine the true state of resource distribution.

Recommendations

To address these issues, a systematic review of medical supplies and support rooms across schools is recommended. Clear guidelines should be established for data reporting to reduce inconsistencies. Ministries and Dzongkhags should prioritize support to schools reporting "No" responses to address resource gaps. Furthermore, regular audits and monitoring should be conducted to verify resource availability and improve data accuracy in the EMIS.

2_2A2exi. Is there essential school-level data in the EMIS, service delivery indicators (includes indicators that determine the minimum resources essential for a well-functioning school system),

including provider ability/qualifications (e.g., minimum knowledge, math and English scores, pedagogy training for teachers).

Table 1.45
2_2A2exi_L * 2_2A2exi * ID Crosstabulation

Count					
ID			2_2A2exi		Total
			0	1	
1	2_2A2exi_L	1		1	1
	Total			1	1
2	2_2A2exi_L	1		1	1
	Total			1	1
3	2_2A2exi_L	1	2	2	4
		2	1	3	4
		3	2	2	4
	Total		5	7	12
4	2_2A2exi_L	1	104	54	158
		2	1	6	7
		3	28	15	43
	Total		133	75	208
Total	2_2A2exi_L	1	106	58	164
		2	2	9	11
		3	30	17	47
	Total		138	84	222

General Trends
The data on provider ability and qualifications in the EMIS highlights that out of 222 responses, 84 (38%) indicated the presence of such data, while 138 (62%) reported its absence. Schools at Level 1 contributed the highest number of "Yes" responses (58), followed by Level 3 (17) and Level 2 (9). The majority of "No" responses were reported at Level 1 (106), indicating that information on teacher qualifications and abilities is largely lacking across schools.

Item-by-Item Analysis
Schools (ID 4) contributed the most significant responses, with 54 "Yes" at Level 1, 6 at Level 2, and 15 at Level 3, indicating some data on teacher qualifications. Dzongkhags (ID 3) reported seven "Yes" responses across all levels, suggesting limited but existent information at the sub-national level. GovTech and PPD each reported one "Yes" response. However, 104 "No" responses from schools at Level 1 demonstrate a considerable gap in the data, emphasizing uneven reporting.

Key Contradictions
The main contradiction arises from schools and Dzongkhags reporting operational activities at all levels while simultaneously lacking consistent data on provider qualifications. For example, Level 1 schools reported 54 "Yes" responses but also 104 "No" responses, reflecting a misalignment between resource allocation and data capture. Similarly, Dzongkhags reported operational activities at Level 2 but provided only a limited number of "Yes" responses.

Recommendations

To improve the availability and reliability of teacher qualification data, a centralized system should be established to standardize data collection and reporting at all levels. Schools and Dzongkhags should be supported with training on how to update and manage teacher qualification data in the EMIS. Additionally, regular audits should be conducted to ensure data accuracy and completeness. Collaboration between the Ministry, Dzongkhags, and schools is essential to align data reporting practices with operational requirements.

2_2A2exii. Is there essential school-level data in the EMIS, service delivery indicators (includes indicators that determine the minimum resources essential for a well-functioning school system), including provider effort (e.g., time spent teaching, absence from classroom, absence from school).

Table 1.46
2_2A2exii_L * 2_2A2exii * ID Crosstabulation

Count					
ID			2_2A2exii		Total
			0	1	
2	2_2A2exii_L	1	1		1
	Total		1		1
3	2_2A2exii_L	1	3	4	7
		2	2	2	4
		3	1	0	1
	Total		6	6	12
4	2_2A2exii_L	1	82	98	180
		2	3	6	9
		3	15	9	24
	Total		100	113	213
Total	2_2A2exii_L	1	86	102	188
		2	5	8	13
		3	16	9	25
	Total		107	119	226

General Trends
The data indicates that out of 226 responses, 119 (53%) confirmed the presence of provider effort data, while 107 (47%) reported its absence. Schools at Level 1 had the highest number of "Yes" responses (102), followed by Level 3 (9) and Level 2 (8). Most "No" responses came from Level 1 (86), highlighting inconsistencies in capturing data on provider effort across operational levels.

Item-by-Item Analysis
Schools (ID 4) contributed the majority of responses, with 98 "Yes" responses at Level 1, 6 at Level 2, and 9 at Level 3, suggesting a higher focus on capturing provider effort data at the school level. Dzongkhags (ID 3) reported six "Yes" responses, distributed evenly across all levels, reflecting limited but existing efforts in data recording. However, 82 "No" responses from schools at Level 1 highlight significant data gaps. GovTech (ID 2) reported only one response, indicating minimal involvement in this domain.

Key Contradictions
A notable contradiction is the significant number of "No" responses at Level 1 (86), despite operational activities indicating data collection efforts. Additionally, Dzongkhags reported equal numbers of "Yes" and "No" responses, suggesting inconsistencies in how provider effort data is

managed. This misalignment highlights the need for standardized data collection practices to ensure uniformity across operational levels.

Recommendations

To address gaps in provider effort data, schools and Dzongkhags should implement standardized tools and guidelines for recording and monitoring teacher activities, including time spent teaching and absences. Training sessions on effective data collection and management in the EMIS should be conducted. Additionally, introducing a centralized monitoring system at the Ministry level could help ensure consistent data reporting across all levels. Regular audits and feedback mechanisms should be established to address data discrepancies and enhance the reliability of provider effort metrics.

2_2A3a. Is there a mechanism to flag or issue early warning reports on the performance of the teachers?

Table 1.47

2_2A3a_L * 2_2A3a * ID Crosstabulation

Count					
ID			2_2A3a		Total
			0	1	
1	2_2A3a_L	3	1		1
	Total		1		1
2	2_2A3a_L	1		1	1
	Total			1	1
3	2_2A3a_L	1	2	3	5
		2	4	2	6
		3	1	0	1
	Total		7	5	12
4	2_2A3a_L	1	134	38	172
		2	3	6	9
		3	19	2	21
	Total		156	46	202
Total	2_2A3a_L	1	136	42	178
		2	7	8	15
		3	21	2	23
	Total		164	52	216

General Trends

Out of 216 responses, 52 (24%) indicated the presence of a mechanism to flag or issue early warning reports on teacher performance, while 164 (76%) reported the absence of such mechanisms. Most "Yes" responses were from Level 1 operations (42 responses), followed by Level 2 (8 responses) and Level 3 (2 responses). Schools (ID 4) contributed the largest share of responses across all levels, highlighting the reliance on school-level inputs.

Item-by-Item Analysis

GovTech (ID 1) and PPD (ID 2) each reported a single "Yes" response, indicating minimal engagement in early warning mechanisms for teacher performance. Dzongkhags (ID 3) showed varied responses, with five "Yes" responses at Level 1 and two each at Levels 2 and 3. Schools (ID 4) accounted for the majority of "Yes" responses, with 38 at Level 1 and eight across Levels

2 and 3. However, schools also contributed significantly to the "No" responses, particularly at Level 1 (134 responses), suggesting potential gaps in implementation or adoption of monitoring systems.

Key Contradictions
A key contradiction emerges from the disproportionate number of "No" responses at Level 1 (136), despite Level 1 also having the highest number of "Yes" responses (42). This indicates inconsistencies in the presence or utilization of mechanisms across schools. Dzongkhags (ID 3) similarly reported mixed responses, with "Yes" and "No" responses scattered across levels, reflecting uneven adoption of early warning systems at the regional level.

Recommendations
To address gaps in teacher performance monitoring, a standardized framework should be introduced at the national level to ensure consistent implementation across schools, Dzongkhags, and Ministry levels. Training sessions and awareness programs could help schools and regional offices understand the importance of these mechanisms and how to implement them effectively. Additionally, central oversight by GovTech and PPD should be strengthened to support and monitor the consistent use of early warning systems. Periodic audits and integration of these mechanisms into the EMIS could enhance their reliability and usability.

2_2A3b. Is there a mechanism to flag or issue early warning reports on the performance of the following: Students?

Table 1.48
2_2A3b_L * 2_2A3b * ID Crosstabulation

Count					
ID			2_2A3b		Total
			0	1	
1	2_2A3b_L	3	1		1
	Total		1		1
2	2_2A3b_L	3	1		1
	Total		1		1
3	2_2A3b_L	1	2	7	9
		2	2	1	3
		3	1	0	1
	Total		5	8	13
4	2_2A3b_L	1	117	63	180
		2	2	4	6
		3	11	7	18
	Total		130	74	204
Total	2_2A3b_L	1	119	70	189
		2	4	5	9
		3	14	7	21
	Total		137	82	219

General Trends

From 219 total responses, 82 (37%) reported having a mechanism to flag or issue early warning reports on student performance, while 137 (63%) reported the absence of such mechanisms. Most "Yes" responses were observed at Level 1 operations (70 responses), followed by Levels 2 and 3 with 5 and 7 responses, respectively. Schools (ID 4) provided the majority of responses, with 63 "Yes" responses at Level 1.

Item-by-Item Analysis

GovTech (ID 1) and PPD (ID 2) each contributed one "Yes" response, suggesting minimal engagement in mechanisms for student performance monitoring. Dzongkhags (ID 3) displayed mixed results, with the highest engagement at Level 1 (7 "Yes" responses) and minimal at Levels 2 and 3. Schools (ID 4) demonstrated the most significant contribution to "Yes" responses, with 63 at Level 1 and 11 combined at Levels 2 and 3. However, schools also accounted for a large share of "No" responses, particularly at Level 1 (117).

Key Contradictions

The substantial number of "No" responses at Level 1 (119) contrasts with the relatively high number of "Yes" responses at the same level (70), highlighting inconsistencies in implementation. Dzongkhags (ID 3) showed similar discrepancies, with "Yes" and "No" responses scattered across all levels, suggesting uneven adoption of early warning systems for students. This inconsistency indicates gaps in awareness, implementation, or resource allocation.

Recommendations

To enhance the effectiveness of student performance monitoring, a unified framework for early warning mechanisms should be developed and implemented across all levels of operation. Schools and regional offices should receive comprehensive training on utilizing these mechanisms. The role of central authorities, such as GovTech and PPD, should be strengthened to provide oversight and technical support. Regular assessments should be conducted to evaluate the effectiveness of these systems, and findings should be integrated into the EMIS for real-time monitoring and reporting.

2_2A3c. Is there a mechanism to flag or issue early warning reports on the performance of the schools?

Table 1.49

2_2A3c_L * 2_2A3c * ID Crosstabulation

Count					
ID			2_2A3c		Total
			0	1	
1	2_2A3c_L	3	1		1
	Total		1		1
3	2_2A3c_L	1	1	4	5
		2	4	3	7
		3	1	0	1
	Total		6	7	13
4	2_2A3c_L	1	105	49	154
		2	7	16	23

		3	15	13	28
	Total		127	78	205
Total	2_2A3c_L	1	106	53	159
		2	11	19	30
		3	17	13	30
	Total		134	85	219

General Trends
From the total of 219 responses, 85 (39%) reported having mechanisms to flag or issue early warning reports on school performance, while 134 (61%) indicated the absence of such mechanisms. Level 1 operations showed the highest engagement, with 53 "Yes" responses, followed by Levels 2 and 3 with 19 and 13 responses, respectively. Schools (ID 4) were the most active contributors, with 78 "Yes" responses, primarily at Level 1.

Item-by-Item Analysis
GovTech (ID 1) reported only one "Yes" response, indicating limited involvement in early warning mechanisms for schools. Dzongkhags (ID 3) demonstrated some engagement, with 7 "Yes" responses distributed across all levels. Schools (ID 4) accounted for the majority of "Yes" responses, with 49 at Level 1 and additional contributions at Levels 2 (16) and 3 (13). However, schools also contributed significantly to "No" responses, particularly at Level 1, with 105.

Key Contradictions
A notable contradiction is the substantial number of "No" responses (106) at Level 1 compared to the relatively high number of "Yes" responses (53) at the same level. This suggests uneven adoption or awareness of early warning systems within school-level operations. Dzongkhags (ID 3) also displayed inconsistencies, with only scattered "Yes" responses across all levels, highlighting variability in the implementation of these mechanisms across regions.

Recommendations
To address gaps in implementing early warning mechanisms for schools, clear guidelines and standardized protocols should be developed and disseminated. Training and capacity-building programs should focus on equipping schools and regional offices with the tools and skills necessary to utilize these systems effectively. Central entities like GovTech should assume a stronger role in monitoring and supporting the rollout of such mechanisms. Regular audits and feedback loops should be established to assess and refine the effectiveness of these systems across all levels of operation.

2_2A4. Does the EMIS system link pre-school, primary, secondary, and higher education data?

Table 1.50
2_2A4_L * 2_2A4 * ID Crosstabulation

Count					
ID			2_2A4		Total
			0	1	
1	2_2A4_L	3	1		1
	Total		1		1
2	2_2A4_L	1		1	1
	Total			1	1

3	2_2A4_L	1	2	2	4
		2	2	2	4
		3	2	2	4
	Total		6	6	12
4	2_2A4_L	1	71	83	154
		2	10	8	18
		3	17	25	42
	Total		98	116	214
Total	2_2A4_L	1	73	86	159
		2	12	10	22
		3	20	27	47
	Total		105	123	228

General Trends

Out of 228 responses, 123 (54%) indicated that the EMIS links data across pre-school, primary, secondary, and higher education, while 105 (46%) reported no such integration. Level 1 operations had the highest number of "Yes" responses (86), followed by Level 3 (27) and Level 2 (10). Schools (ID 4) were the most active contributors, providing 116 "Yes" responses, demonstrating stronger integration at the school level.

Item-by-Item Analysis

GovTech (ID 1) and PPD (ID 2) had minimal involvement, each contributing only one "Yes" response at Level 1. Dzongkhags (ID 3) showed balanced responses, with 6 "Yes" and 6 "No" responses distributed equally across all levels. Schools (ID 4) demonstrated significant engagement, with the majority of "Yes" responses at Level 1 (83), followed by Level 3 (25) and Level 2 (8). However, schools also accounted for the bulk of "No" responses, particularly at Level 1 (71).

Key Contradictions

The most significant contradiction lies in the relatively high number of "No" responses at Level 1 (73) compared to the strong positive responses (86) at the same level. This suggests inconsistent implementation or awareness of the data-linking capabilities of the EMIS at the operational level. Additionally, Dzongkhags (ID 3) displayed uniform distribution of "Yes" and "No" responses, indicating variability in data-linking practices across regions.

Recommendations

To enhance the integration of data across education levels, a standardized framework for data linkage should be developed and implemented at all levels. Schools and regional offices should be trained on the importance and functionality of linking data through the EMIS. Central oversight agencies like GovTech should regularly monitor and assess integration efforts and address discrepancies. Investments in technology infrastructure and capacity-building initiatives are essential to ensure consistent adoption and functionality across all operational levels.

Table 1.51

SWOT Analysis for Administrative Data

Strength	Weakness

Comprehensive Data Coverage High acknowledgment in key areas such as infrastructure, classroom data, graduation rates, and internet access highlights the EMIS's extensive range and capability to capture critical educational metrics. **Strong School-Level Engagement** Schools (Level 1) consistently provide reliable and active data contributions, forming the backbone of the system and supporting progress reporting, milestone tracking, and teacher activity monitoring. **Support for Decision-Making** The EMIS effectively supports resource allocation, planning, and performance evaluation by integrating diverse datasets, including student demographics and resource availability. **Foundations for Monitoring** Acknowledgment of sensitive data categories (e.g., ECD, special needs, and immunization) and mechanisms for tracking teacher and student performance underscore the system's potential for addressing inclusivity and enhancing educational outcomes.	**Inconsistent Reporting** Contradictory and uneven responses (e.g., simultaneous "Yes" and "No" for key metrics) undermine data reliability and stakeholder trust. **Limited Higher-Level Engagement** Dzongkhags (Level 2) and Ministries (Level 3) show minimal involvement, resulting in gaps in data integration and oversight. **Low Acknowledgment in Key Areas** Weak integration in critical areas such as student learning objectives, textbook data, and bathroom facilities reflects incomplete data coverage. **Lack of Standardization** The absence of uniform data collection practices exacerbates regional disparities and reduces system reliability and usability. **Training Deficiencies** Insufficient training for stakeholders at all levels results in inconsistent and inaccurate data reporting, hindering the system's efficiency.
Opportunities	**Threats**
Standardized Frameworks Developing national standards for data collection and reporting can enhance consistency, reduce contradictions, and improve system reliability. **Targeted Training Programs** Comprehensive training initiatives for schools, Dzongkhags, and Ministries can improve stakeholder competency, data accuracy, and overall system performance. **Enhanced Central Oversight** Expanding the roles of central agencies like GovTech and PPD to include higher-level evaluations can improve alignment and accountability. **Technological and Infrastructure Investments** Upgrading resources like internet, water, and medical supplies can address regional inequities and improve data comprehensiveness. **Periodic Audits and Reviews** Regular system evaluations can reconcile discrepancies, strengthen collaboration, and ensure alignment across all levels.	**Reliability and Credibility Risks** Persistent inconsistencies and contradictory data may erode trust in the EMIS, undermining its utility for policymaking and planning. **Over-Reliance on Schools** Heavy dependence on Level 1 data creates vulnerabilities if school-level reporting is incomplete or inaccurate. **Sustainability Challenges** Limited engagement from higher-level stakeholders risks the system's long-term viability and scalability. **Regional and Resource Inequities** Disparities in training, infrastructure, and data adoption may exacerbate systemic gaps and hinder equitable implementation. **Resistance to Change** Stakeholder resistance or lack of awareness regarding new frameworks and technologies could impede progress and adoption of improvements.

1.4.2 Financial Data

Standard: The EMIS contains financial data.

Benchmark ⇒ Latent | Emerging | Established | Advanced

√

The EMIS includes financial data but exhibits significant inconsistencies in coverage, standardization, and accuracy. Data tracking is localized to specific areas, such as schools, with minimal integration at higher administrative levels. Limited use of standardized frameworks and tools undermines system-wide scalability and reliability.

The EMIS demonstrates an "Emerging" capability in financial data tracking, with strong engagement at the school level and early efforts to integrate financial metrics across levels. However, gaps in higher-level oversight, standardization, and technological infrastructure limit its reliability and scalability. By addressing these gaps and fostering stakeholder engagement, the EMIS can advance to the "Established" level and beyond, achieving comprehensive and transparent financial data management.

2_2B1a. Is data available on conditional cash transfers (if applicable), including the meal plans?

Table 1.52
2_2B1a_L * 2_2B1a * ID Crosstabulation

Count					
ID			2_2B1a		Total
			0	1	
1	2_2B1a_L	3	1		1
	Total		1		1
2	2_2B1a_L	1	1		1
	Total		1		1
3	2_2B1a_L	1		9	9
		2		4	4
		3		2	2
	Total			15	15
Total	2_2B1a_L	1	1	9	10
		2	0	4	4
		3	1	2	3
	Total		2	15	17

General Trends

Out of the 17 total responses, 15 (88%) indicated that data on meal plans for conditional cash transfers is available, while only 2 (12%) responded negatively. The majority of "Yes" responses were concentrated at Level 1 operations (9 responses), followed by Level 2 (4 responses) and Level 3 (2 responses). Dzongkhags (ID 3) were the most engaged, contributing 15 "Yes" responses across all levels.

Item-by-Item Analysis

GovTech (ID 1) provided one "No" response at Level 3, suggesting limited engagement or awareness of meal plan data. PPD (ID 2) contributed a single "No" response at Level 1. Dzongkhags (ID 3) demonstrated substantial positive responses, with all their responses affirming the availability of meal plan data, particularly at Level 1 (9 responses). Levels 2 and 3 also recorded positive responses, but with a significantly lower count (4 and 2 responses, respectively).

Key Contradictions
The primary contradiction lies in the isolated "No" responses from GovTech and PPD, despite the overwhelmingly positive responses from Dzongkhags. This discrepancy may point to inconsistencies in communication or reporting mechanisms between centralized authorities and regional bodies. Additionally, the absence of negative responses from Dzongkhags raises questions about whether these levels are over-reporting or misinterpreting the question.

Recommendations
To address the gaps and ensure consistent reporting, it is recommended to standardize data collection and reporting mechanisms across all operational levels. Training programs should be conducted for GovTech and PPD to enhance their understanding of meal plan data availability and their roles in ensuring accurate reporting. Regular audits and cross-verification between centralized and regional entities can further minimize discrepancies. Additionally, strengthening the EMIS framework to include specific indicators for conditional cash transfers can improve data availability and accuracy across all levels.

2_2B1b. Is data available on conditional cash transfers (if applicable), including the subsidies on learning materials (e.g., calculators, workbooks, pencils, etc.)?

Table 1.53
2_2B1b_L * 2_2B1b * ID Crosstabulation

Count					
ID			2_2B1b		Total
			0	1	
1	2_2B1b_L	3	1		1
	Total		1		1
2	2_2B1b_L	1		1	1
	Total			1	1
3	2_2B1b_L	1		10	10
		2		4	4
		3		1	1
	Total			15	15
Total	2_2B1b_L	1	0	11	11
		2	0	4	4
		3	1	1	2
	Total		1	16	17

General Trends
The majority of responses (16 out of 17, or 94%) indicated that data on subsidies for learning materials is available, while only one "No" response (6%) was recorded. The "Yes" responses are heavily concentrated at Level 1 (11 responses), followed by Level 2 (4 responses), and a limited presence at Level 3 (2 responses). Dzongkhags (ID 3) contributed the largest number of "Yes" responses, accounting for 15 out of 16 affirmatives, demonstrating a strong awareness and availability of data at their level.

Item-by-Item Analysis

GovTech (ID 1) provided the sole "No" response at Level 3, which may suggest a gap in data access or reporting at their operational level. PPD (ID 2) recorded a single "Yes" response at Level 1, showing limited engagement. Dzongkhags (ID 3) displayed a robust and consistent reporting of available data, with 10 responses at Level 1, 4 at Level 2, and 1 at Level 3. This pattern underscores their active role in managing and reporting subsidies on learning materials.

Key Contradictions

The key contradiction arises from GovTech's single "No" response at Level 3, contrasting with the overall high positive reporting by Dzongkhags and PPD. This discrepancy may indicate a miscommunication or lack of standardized mechanisms for reporting data availability on subsidies for learning materials at different levels. The limited responses from PPD also highlight potential gaps in their data collection or reporting processes.

Recommendations

To ensure a more consistent and comprehensive reporting mechanism, all stakeholders, including GovTech and PPD, should undergo capacity-building initiatives to standardize data collection and improve their understanding of the data reporting requirements. Enhanced coordination between central and regional entities can bridge discrepancies in reporting. Additionally, integrating clear indicators for subsidies on learning materials into the EMIS framework will improve data availability, accessibility, and alignment across all levels of operation.

2_2B1c. Is data available on conditional cash transfers (if applicable), including other cash / in-kind transfers?

Table 1.54

2_2B1c_L * 2_2B1c * ID Crosstabulation

Count					
ID			2_2B1c		Total
			0	1	
1	2_2B1c_L	3	1		1
	Total		1		1
2	2_2B1c_L	1	1		1
	Total		1		1
3	2_2B1c_L	1	3	7	10
		2	2	1	3
		3	0	1	1
	Total		5	9	14
Total	2_2B1c_L	1	4	7	11
		2	2	1	3
		3	1	1	2
	Total		7	9	16

General Trends

The majority of responses (9 out of 16, or 56%) indicated that data on other cash/in-kind transfers is available, with 7 responses (44%) indicating that it is not. Most of the "Yes" responses were concentrated at Level 1 (7 responses), with fewer at Level 2 (1 response) and Level 3 (1 response). Dzongkhags (ID 3) accounted for most "Yes" responses, while GovTech (ID 1) provided a single "No" response, suggesting a disparity in data availability at different operational levels.

Item-by-Item Analysis
GovTech (ID 1) reported a single "No" response at Level 3, highlighting the absence of data availability for other cash/in-kind transfers in their jurisdiction. PPD (ID 2) provided only one "Yes" response at Level 1, demonstrating limited engagement. Dzongkhags (ID 3) had a significant presence, contributing 7 "Yes" responses at Level 1, 1 at Level 2, and 1 at Level 3, underscoring their primary role in managing and reporting data on other cash/in-kind transfers.

Key Contradictions
A major contradiction arises from the disparity between GovTech's "No" response at Level 3 and Dzongkhags' consistent "Yes" responses across Levels 1, 2, and 3. This inconsistency suggests potential gaps in data sharing or reporting mechanisms between these entities. Additionally, the limited contribution from PPD highlights a lack of comprehensive involvement or access to relevant data on other cash/in-kind transfers.

Recommendations
To address these gaps, there is a need to establish a centralized and standardized data collection and reporting mechanism for other cash/in-kind transfers. Strengthening coordination and communication between GovTech, PPD, and Dzongkhags can help ensure consistent reporting and reduce discrepancies. Training programs and capacity-building initiatives should be introduced to improve data management skills at all levels. Finally, integrating specific indicators for cash/in-kind transfers into the EMIS framework can enhance data accessibility and reliability.

2_2B2a. Is data available on the breakdown of funding per school from the government?

Table 1.55
2_2B2a_L * 2_2B2a * ID Crosstabulation

Count					
ID			2_2B2a		Total
			0	1	
1	2_2B2a_L	3	1		1
	Total		1		1
2	2_2B2a_L	1		1	1
	Total			1	1
3	2_2B2a_L	1	3	3	6
		2	3	1	4
		3	2	0	2
	Total		8	4	12
Total	2_2B2a_L	1	3	4	7
		2	3	1	4
		3	3	0	3
	Total		9	5	14

General Trends
Out of 14 responses, 9 (64%) indicated that data on the breakdown of funding per school from the government is not available, while 5 (36%) indicated it is available. Most "Yes" responses were concentrated at Level 1 (4 out of 5), highlighting the focus on individual schools. GovTech (ID 1) contributed a single "No" response at Level 3, while PPD (ID 2) provided one "Yes" response at Level 1. Dzongkhags (ID 3) showed mixed responses, with both "Yes" and "No" answers distributed across all levels.

Item-by-Item Analysis
GovTech (ID 1) reported "No" at Level 3, indicating a lack of available funding breakdown data at the ministry level. PPD (ID 2) had a limited presence, providing a single "Yes" response at Level 1. Dzongkhags (ID 3) showed a higher level of engagement, contributing 3 "No" responses at Level 1, 3 at Level 2, and 2 at Level 3. However, their "Yes" responses were confined to Level 1 (3 responses) and Level 2 (1 response), suggesting partial availability of data at the subnational level.

Key Contradictions
The primary contradiction lies in the disparity between the higher number of "No" responses from Dzongkhags at Levels 2 and 3 and their "Yes" responses at Level 1. This inconsistency implies that while funding data may be available at the school level, it is not consistently accessible or reported at the dzongkhag or ministry levels. Additionally, the absence of "Yes" responses from GovTech at Level 3 highlights a significant gap in centralized data availability.

Recommendations
To bridge these gaps, efforts should focus on enhancing data collection and reporting mechanisms at all levels of operation. GovTech should prioritize creating a centralized database for government funding breakdowns, ensuring uniformity in data availability across all levels. Regular training and capacity-building workshops for dzongkhag-level officials can improve the quality and consistency of reporting. Additionally, the EMIS should integrate standardized indicators for funding sources to facilitate better tracking and analysis of financial data at school, dzongkhag, and ministry levels.

2_2B2b. Is data available on the breakdown of funding per school from tuition fees?

Table 1.56
2_2B2b_L * 2_2B2b * ID Crosstabulation

Count					
ID			2_2B2b		Total
			0	1	
1	2_2B2b_L	3	1		1
	Total		1		1
2	2_2B2b_L	1		1	1
	Total			1	1
3	2_2B2b_L	1	2	6	8
		2	3	1	4
		3	0	1	1
	Total		5	8	13
Total	2_2B2b_L	1	2	7	9

		2	3	1	4
		3	1	1	2
	Total		6	9	15

General Trends

Out of 15 responses, 9 (60%) indicated that data on the breakdown of funding per school from tuition fees is available, while 6 (40%) stated it is not. Most of the "Yes" responses (7 out of 9) are concentrated at Level 1, highlighting the availability of this data at the school level. Responses from GovTech (ID 1) and PPD (ID 2) are minimal, with only one response each indicating availability at Levels 3 and 1, respectively. Dzongkhags (ID 3) provided the majority of responses, showing mixed results across all levels.

Item-by-Item Analysis

GovTech (ID 1) provided a single response, indicating the absence of tuition fee data at Level 3, highlighting gaps at the ministry level. PPD (ID 2) also submitted one response, indicating that tuition fee data is available at Level 1, showing a limited focus on school-level data. Dzongkhags (ID 3) contributed the majority of responses, with 6 "Yes" responses at Level 1, indicating that tuition fee data is more consistently available at the school level. However, their "No" responses at Levels 1 (2 responses) and 2 (3 responses) reveal inconsistencies in data availability and collection practices, particularly at higher administrative levels. This distribution underscores a lack of standardized reporting across levels, with notable gaps in data aggregation and accessibility at Level 3.

Key Contradictions

A key contradiction arises from the predominance of "Yes" responses at Level 1 (school level) contrasted with multiple "No" responses at Levels 2 and 3. This discrepancy indicates that while tuition fee data is readily available at individual schools, it is either not collected, reported, or accessible at higher administrative levels (dzongkhag and ministry). The lack of centralized data at Level 3 highlights a significant gap in coordination and oversight by GovTech.

Recommendations

To address these inconsistencies, a centralized mechanism should be established to standardize the collection and reporting of tuition fee data across all levels. GovTech should lead the development of a unified reporting template within the EMIS to ensure consistency in data entry at the school level and seamless aggregation at dzongkhag and ministry levels. Training workshops for dzongkhag officials on data reporting procedures can enhance accuracy and reliability. Additionally, regular audits and monitoring should be conducted to verify the completeness and quality of tuition fee data across all levels.

2_2Bc. Is data available on the breakdown of funding per school from donations?

Table 1.57

2_2B2c_L * 2_2B2c * ID Crosstabulation

Count					
ID			2_2B2c		Total
			0	1	
1	2_2B2c_L	3	1		1
	Total		1		1

2	2_2B2c_L	1		1	1
	Total			1	1
3	2_2B2c_L	1	3	2	5
		2	4	1	5
		3	0	2	2
	Total		7	5	12
Total	2_2B2c_L	1	3	3	6
		2	4	1	5
		3	1	2	3
	Total		8	6	14

General Trends

The analysis of responses regarding the availability of data on funding from donations indicates a mixed pattern of accessibility across levels and agencies. A total of 14 responses were collected, with six affirming the availability of data. Most "Yes" responses (3) were associated with Level 1 (school level), while Levels 2 (Dzongkhag) and 3 (Ministry) had fewer confirmations, with one and two "Yes" responses, respectively. This suggests that donation data is more accessible at the school level, while there are notable gaps at the higher administrative levels.

Item-by-Item Analysis

GovTech (ID 1) provided one response indicating the absence of donation data at Level 3. PPD (ID 2) reported the presence of donation data at Level 1, but their single contribution limits comprehensive insights. Dzongkhags (ID 3) showed variability, with five responses affirming the availability of data (two at Level 1, one at Level 2, and two at Level 3) but also significant gaps, as evidenced by seven "No" responses, predominantly at Levels 1 (three responses) and 2 (four responses). This variability highlights inconsistencies in donation data collection and reporting practices, particularly at Dzongkhag and Ministry levels.

Key Contradictions

A key contradiction emerges from the reported lack of donation data at Levels 2 and 3 by certain Dzongkhags, despite their critical roles in aggregating and managing school-level funding data. Additionally, GovTech's single "No" response at Level 3 further underscores a disconnect between data accessibility and its aggregation at the ministry level. These gaps may reflect issues in data collection methodologies, inconsistent reporting practices, or lack of standardized frameworks.

Recommendations

To address these gaps, standardized protocols for donation data collection and reporting should be implemented across all levels. Training programs for Dzongkhags and school administrators on accurate data entry and reporting mechanisms can improve data quality and consistency. Additionally, a centralized EMIS platform with mandatory data entry fields for donation-related information could enhance uniformity. Regular audits and inter-agency coordination can ensure accountability and foster a culture of transparency in tracking school funding sources.

2_2B2d. Is data available on the breakdown of funding per school from grants?

Table 1.58

2_2B2d_L * 2_2B2d * ID Crosstabulation

Count					
ID			2_2B2d		Total
			0	1	
1	2_2B2d_L	3	1		1
	Total		1		1
2	2_2B2d_L	3	1		1
	Total		1		1
3	2_2B2d_L	1	2	5	7
		2	1	3	4
		3	1	1	2
	Total		4	9	13
Total	2_2B2d_L	1	2	5	7
		2	1	3	4
		3	3	1	4
	Total		6	9	15

General Trends

The analysis of data availability regarding grants as a funding source reveals mixed responses across levels and agencies. Out of 15 total responses, nine indicated the presence of grant data, primarily concentrated at Level 1 (five responses) and Level 2 (three responses), with fewer confirmations at Level 3 (one response). This trend suggests relatively better data availability at the school and Dzongkhag levels, with significant gaps persisting at the ministry level.

Item-by-Item Analysis

GovTech (ID 1) and PPD (ID 2) each contributed one response, both indicating the absence of grant data at Level 3. Dzongkhags (ID 3) displayed the most variation, with five "Yes" responses confirming data availability at Level 1, three at Level 2, and only one at Level 3. However, their four "No" responses (two at Level 1, one at Level 2, and one at Level 3) highlight inconsistencies in data management practices. These results underline a lack of uniformity in grant data reporting across administrative levels and agencies.

Key Contradictions

A notable contradiction arises from the lack of grant data at Level 3, where aggregated information is essential for strategic planning and policy decisions. Despite Dzongkhag-level confirmations of grant data availability, gaps persist at higher levels, indicating inefficiencies in data flow from decentralized to centralized systems. Furthermore, GovTech and PPD's inability to confirm data availability at Level 3 suggests a need for clearer responsibilities and standardized data-sharing protocols.

Recommendations

To address the discrepancies, the EMIS framework should include a mandatory, standardized reporting module for grant-related data. Training programs at all levels can enhance data collection accuracy and reporting consistency. Regular inter-agency coordination meetings and the establishment of clear data-sharing responsibilities can bridge the gaps between decentralized and centralized levels. Additionally, integrating grant data fields into a centralized EMIS dashboard will ensure real-time updates and facilitate evidence-based decision-making at the ministry level.

2_2B2e. Is data available on the breakdown of funding per school from school revenue?

Table 1.59
2_2B2e_L * 2_2B2e * ID Crosstabulation

Count					
ID			2_2B2e		Total
			0	1	
1	2_2B2e_L	3	1		1
	Total		1		1
2	2_2B2e_L	1	1		1
	Total		1		1
3	2_2B2e_L	1	3	6	9
		2	1	2	3
		3	1	0	1
	Total		5	8	13
Total	2_2B2e_L	1	4	6	10
		2	1	2	3
		3	2	0	2
	Total		7	8	15

General Trends
The data on funding per school from school revenue indicates that out of the 15 responses, eight reported the availability of data (Yes), while seven indicated a lack of data (No). The responses are primarily concentrated at the school level (L=1), where six out of 10 respondents indicated the availability of data. The other responses at the dzongkhag (L=2) and ministry (L=3) levels show limited acknowledgment of school revenue data, with only two affirmative responses combined.

Item-by-Item Analysis
At the school level (L=1), a majority (6 out of 10) confirmed the availability of school revenue data, suggesting that most information on this funding source is collected directly at the school level. At the dzongkhag level (L=2), there were three responses, with two indicating the availability of data. For the ministry level (L=3), only two responses were recorded, both of which indicated that school revenue data is not available at this level, highlighting minimal centralized tracking for this source.

Key Contradictions
A key contradiction arises at the dzongkhag level (L=2), where there is an acknowledgment of data availability for school revenue in some cases, yet there is limited comprehensive data linkage with the higher or lower levels of operation. Furthermore, the absence of data at the ministry level (L=3), despite its role in financial oversight, suggests a potential gap in top-level monitoring and reporting on school-generated revenue.

Recommendations
To improve institutionalization and ensure data availability across all levels, it is recommended to develop a centralized data collection mechanism that links school-level revenue information with dzongkhag and ministry-level systems. Additionally, standardized templates and reporting protocols should be introduced to capture this data uniformly across all levels of operation. Training for stakeholders involved in the data collection process, particularly at the school and dzongkhag levels, will also enhance data accuracy and comprehensiveness.

2_2B3. Does the system track how the money received is spent?

Table 1.60
2_2B3_L * 2_2B3 * ID Crosstabulation

Count					
ID			2_2B3		Total
			0	1	
1	2_2B3_L	3	1		1
	Total		1		1
2	2_2B3_L	1		1	1
	Total			1	1
3	2_2B3_L	1	4	3	7
		2	3	1	4
		3	1	0	1
	Total		8	4	12
Total	2_2B3_L	1	4	4	8
		2	3	1	4
		3	2	0	2
	Total		9	5	14

General Trends
The data indicates that out of 14 responses, five confirm the availability of mechanisms to track how money received from various sources is spent, while nine responses indicate the absence of such tracking. Most responses pertain to the school level (L=1), where half of the responses (4 out of 8) confirm the presence of tracking mechanisms. Tracking at the dzongkhag (L=2) and ministry (L=3) levels is limited, with only one affirmative response across both levels.

Item-by-Item Analysis
At the school level (L=1), there is a balanced split, with four responses indicating the presence of tracking systems and four indicating the absence. At the dzongkhag level (L=2), out of four responses, only one confirms the availability of tracking mechanisms, highlighting limited financial monitoring at this level. At the ministry level (L=3), no responses confirm the presence of tracking mechanisms, signaling a significant gap in centralized oversight of financial expenditures.

Key Contradictions
A notable contradiction exists in the distribution of responses. While tracking mechanisms are present at the school level (L=1) in some cases, the absence of corresponding mechanisms at the dzongkhag (L=2) and ministry (L=3) levels suggests a lack of integration and accountability across operational tiers. This misalignment undermines the ability to ensure transparent and consistent financial reporting.

Recommendations
To address these gaps, it is essential to establish a unified financial tracking system integrated across all levels of operation. This system should include standardized reporting formats and automated tools to monitor how funds are utilized. Training programs for stakeholders at all levels will ensure accurate data entry and compliance. Additionally, routine audits and feedback

mechanisms should be implemented to improve transparency and build trust in financial management processes.

2_2B4. Does the system track data on the financial value of the land occupied by the school and the school infrastructure?

Table 1.61
2_2B4_L * 2_2B4 * ID Crosstabulation

Count						
ID			2_2B4			Total
			0	1	3	
1	2_2B4_L	3	1			1
	Total		1			1
2	2_2B4_L	0			1	1
	Total				1	1
3	2_2B4_L	1	1	5		6
		2	2	2		4
		3	2	1		3
	Total		5	8		13
Total	2_2B4_L	0	0	0	1	1
		1	1	5	0	6
		2	2	2	0	4
		3	3	1	0	4
	Total		6	8	1	15

General Trends
The analysis reveals that out of 15 responses, eight confirm the presence of a system to track data on the financial value of the land and infrastructure occupied by schools, while six indicate the absence of such a system. Most affirmative responses (five) are at the school level (L=1), with limited tracking reported at the dzongkhag (L=2) and ministry (L=3) levels. A single response mapped to an unspecified level highlights additional ambiguity in tracking practices.

Item-by-Item Analysis
At the school level (L=1), five out of six responses confirm the availability of tracking mechanisms for land and infrastructure valuation, indicating a relatively higher level of monitoring. At the dzongkhag level (L=2), two responses affirm tracking systems, while two do not, reflecting inconsistent practices. At the ministry level (L=3), only one affirmative response was reported, with three indicating the absence of such tracking systems, emphasizing a significant gap in centralized oversight.

Key Contradictions
The primary contradiction lies in the apparent disparity between the school level and higher operational levels (dzongkhag and ministry) in terms of tracking financial data related to land and infrastructure. While schools appear to maintain some form of tracking, the absence of similar systems at higher levels undermines integration, oversight, and the ability to make informed policy decisions. Additionally, the mapping of a response to an unspecified level suggests inconsistencies in data reporting and categorization.

Recommendations

To address these discrepancies, it is crucial to establish a centralized and integrated system for tracking the financial value of land and school infrastructure across all levels of operation. This system should include clear reporting protocols and standardized valuation methods to ensure consistency. Training sessions for stakeholders at all levels will improve data accuracy and compliance. Furthermore, periodic audits and cross-verification of data should be conducted to enhance accountability and transparency in financial management.

2_2B5. Is it possible to estimate the unit cost per student?

Table 1.62
2_2B5_L * 2_2B5 * ID Crosstabulation

Count					
ID			2_2B5		Total
			0	1	
1	2_2B5_L	3	1		1
	Total		1		1
2	2_2B5_L	0		1	1
	Total			1	1
3	2_2B5_L	1	0	6	6
		2	3	2	5
		3	0	2	2
	Total		3	10	13
Total	2_2B5_L	0	0	1	1
		1	0	6	6
		2	3	2	5
		3	1	2	3
	Total		4	11	15

General Trends
The analysis of the responses shows that out of 15 responses, 11 confirm the possibility of estimating the unit cost per student, while four indicate that it is not possible. Most affirmative responses (six) are mapped to the school level (L=1), followed by the dzongkhag level (L=2) with two, and the ministry level (L=3) with two as well. A single response is mapped to an unspecified level, indicating ambiguity in operational categorization.

Item-by-Item Analysis
At the school level (L=1), all six responses confirm the feasibility of estimating the unit cost per student, reflecting robust data availability at this level. At the dzongkhag level (L=2), two out of five responses affirm the capability to estimate unit costs, suggesting partial implementation of cost tracking. At the ministry level (L=3), two of three responses confirm the capability, but one indicates the absence of such tracking, pointing to gaps in centralized financial analysis. The mapping of one response to an unspecified level further highlights inconsistencies in reporting practices.

Key Contradictions
The key contradiction lies in the disparity between operational levels regarding the capability to estimate unit costs. While schools exhibit a higher level of preparedness, the dzongkhag and ministry levels show gaps in data tracking and analysis. This inconsistency may hinder the

integration of cost analysis across levels, affecting strategic decision-making. The presence of an unspecified level for one response underscores a lack of clarity in data categorization.

Recommendations

To ensure consistent and comprehensive cost estimation, a unified data management framework should be established, integrating all operational levels. Schools, dzongkhags, and the ministry should adopt standardized methods for tracking and reporting cost data. Capacity-building programs and clear guidelines should be introduced to enhance data accuracy and compliance at all levels. Finally, the system should include mechanisms for cross-verification and validation to minimize discrepancies and improve data reliability.

Table 1.63

SWOT Analysis for Financial Data

Strength	Weakness
Localized Engagement Schools demonstrate strong engagement in data tracking across multiple categories, particularly meal plans (88%), subsidies (94%), tuition fees (60%), and unit cost per student (73%). Dzongkhags actively contribute to data management, affirming their role in managing subsidies, cash transfers, and funding data. **Foundation for Financial Oversight** Tracking mechanisms for specific financial aspects, such as land/infrastructure value and expenditures, show partial implementation, with significant activity at the school level. Unit cost per student data is tracked at multiple levels, reflecting emerging integration efforts across administrative hierarchies. **Data Availability** Meal plan, subsidy, and tuition fee data exhibit high levels of availability, demonstrating potential for expanding financial oversight capabilities..	**Inconsistent Implementation and Engagement** Significant data gaps persist across higher administrative levels (Dzongkhags and ministry), with "No" responses ranging from 27% to 64% across categories. Minimal involvement from GovTech and PPD, particularly for cash/in-kind transfers, subsidies, and donation data, limits centralized oversight. **Fragmented Reporting Practices** Discrepancies between data reported at the school level and at Dzongkhags or ministry levels highlight misaligned practices and communication gaps. Isolated reporting and variability in data availability (e.g., grant funding, revenue tracking) hinder system-wide integration and reliability. **Limited Use of Centralized Systems** Absence of standardized templates and protocols for data collection reduces consistency and transparency across operational levels. Lack of advanced tracking tools for financial and operational data impedes automation and scalability.
Opportunities	**Threats**
Standardization and Framework Development Introduce centralized and standardized data collection frameworks for financial and operational metrics within the EMIS. Integrate specific indicators for subsidies, cash transfers, and donations to enhance granularity and reliability. **Capacity Building and Training** Targeted training for GovTech, PPD, and Dzongkhag officials to improve data management capabilities and engagement.	**Data Reliability and Trust** Discrepancies between centralized and localized responses undermine the credibility of the data, potentially affecting policy and resource allocation. Inconsistent reporting practices across regions and levels may perpetuate data gaps and inefficiencies. **Limited Stakeholder Engagement** Minimal contributions from GovTech and PPD could lead to persistent oversight issues and uncoordinated efforts.

Develop technical and operational training modules to ensure accurate reporting and effective use of EMIS features. **Enhanced Oversight and Collaboration** Strengthen coordination between centralized entities (GovTech, PPD) and regional authorities (Dzongkhags, schools) to bridge data gaps. Leverage cross-verification mechanisms to ensure the accuracy and reliability of financial and operational data. **Technological Investments** Deploy advanced tools for financial tracking, data validation, and automated reporting within the EMIS. Expand infrastructure to facilitate seamless integration across all administrative levels.	Over-reliance on Dzongkhags risks inflated or unverified data, further reducing system reliability. **Fragmented Oversight** Without a unified approach, gaps in financial and operational tracking may hinder effective planning and equitable resource distribution. Absence of standardized systems for data reporting poses risks to financial transparency and accountability.

1.4.3 Human Resources Data

The EMISI contains human resources data.

Benchmark ⇒ Latent | Emerging | Established | Advanced

√

The EMIS includes human resource data but exhibits gaps in coverage, standardization, and integration. Schools engage actively in localized tracking, but higher levels (dzongkhags and ministries) show uneven or minimal participation. There are limited mechanisms for system-wide oversight and aggregation.

The EMIS demonstrates an Emerging capability in human resource data tracking, with strong localized engagement but significant gaps at higher administrative levels. By addressing deficiencies in central oversight, standardization, and technology adoption, the EMIS can transition to an Established level, enabling reliable and integrated human resource data management across all operational levels.

2_2C1a. Does the EMIS track data on teaching staff (e.g., qualifications, experience, etc.)?

Table 1.64
2_2C1a_L * 2_2C1a * ID Crosstabulation

Count								
ID			2_2C1a					Total
			0	1	2	3	9	
1	2_2C1a_L	1		1				1
	Total			1				1
2	2_2C1a_L	1	1					1
	Total		1					1
3	2_2C1a_L	0		1	2	0	2	5
		1		5	4	1	0	10
	Total			6	6	1	2	15

Total	2_2C1a_L	0	0	1	2	0	2	5
		1	1	6	4	1	0	12
	Total		1	7	6	1	2	17

General Trends

The EMIS tracking data on teaching staff shows that 12 of the 17 responses confirm data availability across various operational levels. The school level (L=1) is most strongly represented, accounting for six responses, followed by the dzongkhag level (L=2) with four responses. The ministry level (L=3) has one response, while there is no clear mapping for five responses at level zero (L=0), which indicates gaps in data categorization or system clarity.

Item-by-Item Analysis

At the school level (L=1), all six responses confirm the availability of teaching staff data, highlighting that this level has the most complete implementation of tracking. At the dzongkhag level (L=2), four responses confirm tracking, suggesting moderate coverage but potential for improvement. At the ministry level (L=3), only one response affirms the availability of teaching staff data, signaling a critical need for enhancements in data collection at this centralized level. The presence of five unmapped responses (L=0) suggests an underlying issue in system design or reporting procedures.

Key Contradictions

The primary contradiction lies in the disparity between the operational levels, with schools showing comprehensive data tracking, while the dzongkhag and ministry levels lag behind. Additionally, the unmapped responses (L=0) further complicate the data landscape, potentially leading to inefficiencies or missed opportunities for systemic integration and analysis.

Recommendations

To address these gaps, the EMIS should implement a standardized framework for tracking teaching staff data at all operational levels. This includes integrating mechanisms for real-time data entry, validation, and analysis at the dzongkhag and ministry levels. Training programs should be introduced to ensure all stakeholders are aligned with system protocols. Finally, the system should include automated checks to eliminate unmapped responses and ensure data completeness and consistency.

2_2C1b. Does the EMIS track data on non-teaching staff?

Table 1.65

2_2C1b_L * 2_2C1b * ID Crosstabulation

Count						
ID			2_2C1b			Total
			1	2	9	
1	2_2C1b_L	1	1			1
	Total		1			1
2	2_2C1b_L	3	1			1
	Total		1			1
3	2_2C1b_L	0	3	1	2	6

		1	5	4	0	9
	Total		8	5	2	15
Total	2_2C1b_L	0	3	1	2	6
		1	6	4	0	10
		3	1	0	0	1
	Total		10	5	2	17

General Trends

The EMIS tracking of data on non-teaching staff is confirmed in 10 out of 17 responses across all levels. The school level (L=1) has the highest number of responses (6), indicating relatively robust tracking at this level. The dzongkhag level (L=2) follows with 4 responses, while the ministry level (L=3) has only 1 response. There are 6 unmapped responses at level zero (L=0), reflecting potential inconsistencies in categorization or reporting.

Item-by-Item Analysis

At the school level (L=1), the system shows significant data availability, with six responses confirming tracking. The dzongkhag level (L=2) demonstrates moderate tracking with four positive responses, while the ministry level (L=3) has minimal data, with only one response indicating availability. The six unmapped responses (L=0) highlight issues in aligning data with specific operational levels, which might result from gaps in the system's reporting framework.

Key Contradictions

The main contradiction lies in the uneven distribution of data tracking across operational levels. While schools are well-represented, the dzongkhag and ministry levels lack sufficient data tracking, which undermines the ability to create a comprehensive and centralized view of non-teaching staff. Additionally, unmapped responses at level zero (L=0) indicate deficiencies in the system's design or usage, resulting in unclear data categorization.

Recommendations

To address these issues, the EMIS should enhance data tracking mechanisms at the dzongkhag and ministry levels by introducing standardized protocols and workflows. Training for personnel at these levels will ensure consistent data entry and alignment with system requirements. Furthermore, the system should be upgraded to eliminate unmapped responses (L=0) through automated checks and validation processes, improving overall data quality and usability.

2_2C1c. Does the EMIS track data salaries of teaching staff?

Table 1.66

2_2C1c_L * 2_2C1c * ID Crosstabulation

Count							
ID			2_2C1c				Total
			0	1	2	9	
1	2_2C1c_L	3	1				1
	Total		1				1
2	2_2C1c_L	3		1			1
	Total			1			1
3	2_2C1c_L	0		1	1	2	4
		1		9	2	0	11
	Total			10	3	2	15

Total	2_2C1c_L	0	0	1	1	2	4
		1	0	9	2	0	11
		3	1	1	0	0	2
	Total		1	11	3	2	17

General Trends
The EMIS shows that data on teaching staff salaries is moderately tracked, with 11 positive responses at level 1 (L=1), indicating significant coverage at the dzongkhag level. However, there is minimal tracking at the school (L=0) and ministry (L=3) levels, with only one response each. Two responses remain unmapped, which may signal gaps in categorization or alignment within the EMIS framework.

Item-by-Item Analysis
At the dzongkhag level (L=1), the majority of responses (9) confirm that salary data for teaching staff is well tracked, while levels 2 and 3 show limited tracking, with only two responses combined. At the school level (L=0), no tracking is reported, which is concerning, given the importance of comprehensive salary data for operational and policy-making purposes.

Key Contradictions
A major contradiction arises from the lack of data tracking at the school (L=0) and ministry (L=3) levels despite their pivotal roles in managing teacher employment and compensation. The two unmapped responses exacerbate this issue, pointing to potential system inefficiencies or user errors in data entry, which may compromise the comprehensiveness and reliability of the EMIS.

Recommendations
To address these gaps, the EMIS should integrate consistent salary tracking protocols across all operational levels, particularly at the school and ministry levels. Introducing mandatory reporting and periodic audits can ensure compliance and accuracy. Training for EMIS users should also emphasize the importance of mapping responses correctly to prevent unmapped data, ensuring that the system provides a reliable and complete picture of teaching staff salaries.

2_2C1d. Does the EMIS track data on salaries of non-teaching staff (e.g., administrative staff, management staff, security and janitorial staff, transportation staff)?

Table 1.67
2_2C1d_L * 2_2C1d * ID Crosstabulation

Count							
ID			2_2C1d				Total
			0	1	2	9	
1	2_2C1d_L	3	1				1
	Total		1				1
2	2_2C1d_L	3		1			1
	Total			1			1
3	2_2C1d_L	0		6	1	2	9
		1		3	3	0	6
	Total			9	4	2	15
Total	2_2C1d_L	0	0	6	1	2	9
		1	0	3	3	0	6
		3	1	1	0	0	2

	Total	1	10	4	2	17

General Trends
The EMIS moderately tracks data on salaries of non-teaching staff, with 10 positive responses across all levels. The dzongkhag level (L=0) demonstrates the highest tracking activity, accounting for six responses. However, the system exhibits low activity at the school (L=0) and ministry (L=3) levels, with minimal or no responses recorded.

Item-by-Item Analysis
At the dzongkhag level (L=1), six responses confirm tracking of non-teaching staff salaries, while at the ministry level (L=3), only two responses are reported. The school level (L=0) shows no tracking activity. Most data is focused at the dzongkhag level, where administrative coordination is likely stronger. However, there is minimal representation of tracking at the ministry and school levels, limiting a holistic understanding of salary distribution.

Key Contradictions
A significant contradiction exists between the importance of salary data for non-teaching staff and its limited tracking at the ministry and school levels. This inconsistency may suggest a lack of prioritization or systemic barriers to data collection at these levels. The absence of responses at the school level is particularly concerning given that non-teaching staff play critical operational roles.

Recommendations
The EMIS should expand its tracking mechanisms for non-teaching staff salaries, emphasizing the school and ministry levels. Standardized salary data entry protocols and cross-level data integration are critical to filling these gaps. Training for EMIS users across all levels should emphasize the importance of comprehensive data collection. Regular system audits can also ensure consistent tracking and address any discrepancies promptly.

2_2C1e. Does the EMIS track data on performance evaluation data from classroom observations?

Table 1.68
2_2C1e_L * 2_2C1e * ID Crosstabulation

Count								
ID			2_2C1e					Total
			0	1	2	3	9	
1	2_2C1e_L	3	1					1
	Total		1					1
3	2_2C1e_L	0		5	2	0	3	10
		1		2	2	1	0	5
	Total			7	4	1	3	15
Total	2_2C1e_L	0	0	5	2	0	3	10
		1	0	2	2	1	0	5
		3	1	0	0	0	0	1
	Total		1	7	4	1	3	16

General Trends
The EMIS tracks classroom observation data for performance evaluation to a limited extent, with seven positive responses at the dzongkhag level (L=0) and two at the school level (L=1). However,

there is minimal activity at the ministry level (L=3), with no responses reported. This indicates a focus on operational data collection primarily at the dzongkhag level.

Item-by-Item Analysis
At the dzongkhag level (L=0), five responses affirm tracking, primarily distributed across various dzongkhags. At the school level (L=1), two responses confirm data tracking, indicating sporadic efforts at the grassroots level. No responses are observed at the ministry level (L=3), highlighting a gap in central-level oversight or reporting mechanisms for classroom observation-based performance evaluation.

Key Contradictions
The absence of performance evaluation data tracking at the ministry level contrasts sharply with its presence at the dzongkhag and school levels. This inconsistency may reflect a lack of policy alignment or inadequate integration of observation data into higher-level decision-making frameworks. Additionally, the uneven distribution of tracking activity at the dzongkhag level suggests a lack of standardization across regions.

Recommendations
To address these gaps, the EMIS should implement a standardized framework for tracking classroom observation data across all levels. The ministry level should prioritize integrating this data to ensure alignment with national policies and broader educational goals. Training programs for school and dzongkhag administrators should emphasize the importance of consistent data entry and reporting. Finally, regular audits and feedback mechanisms can enhance the reliability and comprehensiveness of performance evaluation data in the EMIS.

2_2C1f. Does the EMIS track data on performance evaluation procedure to track staff attendance and absenteeism?

Table 1.69
2_2C1f_L * 2_2C1f * ID Crosstabulation

Count							
ID			2_2C1f				Total
			1	2	3	9	
1	2_2C1f_L	1	1				1
	Total		1				1
2	2_2C1f_L	1			1		1
	Total				1		1
3	2_2C1f_L	0	1	1		3	5
		1	8	2		0	10
	Total		9	3		3	15
Total	2_2C1f_L	0	1	1	0	3	5
		1	9	2	1	0	12
	Total		10	3	1	3	17

General Trends
The EMIS demonstrates some capacity to track staff attendance and absenteeism, with 10 affirmative responses at the school level (L=1) and three at the dzongkhag level (L=2). There are no responses from the ministry level (L=3), indicating a gap in centralized monitoring of

attendance data. This suggests a stronger focus on local-level data collection, particularly at schools.

Item-by-Item Analysis

At the school level (L=1), nine responses confirm the tracking of attendance and absenteeism, showcasing a significant effort at the grassroots level. The dzongkhag level (L=2) has three responses, indicating some oversight at the regional level. However, the absence of affirmative responses at the ministry level (L=3) highlights a lack of central integration for attendance monitoring. Additionally, one response at the school level indicates uncertainty (category 3), reflecting potential inconsistencies in implementation or awareness.

Key Contradictions

A notable contradiction arises from the lack of centralized tracking (L=3) despite active efforts at lower levels. This inconsistency may impede the alignment of staff performance data with broader policy objectives. Furthermore, the uneven distribution of tracking at the dzongkhag level suggests varying degrees of implementation, which could hinder the consistency of data collection and reporting across regions.

Recommendations

To improve institutionalization, the EMIS should establish a centralized mechanism to integrate attendance and absenteeism data from all levels, ensuring uniform tracking and oversight. Training sessions should be conducted to standardize data collection procedures at schools and dzongkhags. Additionally, a feedback loop between local and ministry levels can enhance data accuracy and facilitate evidence-based policymaking. Regular audits and user support initiatives can further bolster system reliability and adoption.

2_2C1g. Does the EMIS track data on professional development training and certifications?

Table 1.70

2_2C1g_L * 2_2C1g * ID Crosstabulation

Count							
ID			2_2C1g				Total
			1	2	3	9	
1	2_2C1g_L	1	1				1
	Total		1				1
2	2_2C1g_L	1			1		1
	Total				1		1
3	2_2C1g_L	0	2	1	0	2	5
		1	6	2	1	1	10
	Total		8	3	1	3	15
Total	2_2C1g_L	0	2	1	0	2	5
		1	7	2	2	1	12
	Total		9	3	2	3	17

General Trends

The EMIS system shows a moderate ability to track data on professional development training and certifications, with 12 affirmative responses. These responses are mostly concentrated at the school level (L=1) with seven confirmations, followed by three at the dzongkhag level (L=2), and two at

the ministry level (L=3). This distribution indicates a stronger focus on professional development tracking at the school level compared to higher administrative levels.

Item-by-Item Analysis
At the school level (L=1), seven affirmative responses suggest that tracking of professional development is fairly established in many schools. The dzongkhag level (L=2) has three positive responses, indicating moderate regional oversight. The ministry level (L=3), however, shows only two affirmative responses, reflecting limited central tracking of professional development. There are also five responses indicating uncertainty (category 3) across all levels, signaling some inconsistencies in awareness or implementation.

Key Contradictions
A key contradiction is the limited tracking of professional development at the ministry level (L=3) despite its importance in policy alignment and strategic oversight. Furthermore, the uneven distribution of responses, particularly the uncertainties, suggests that the EMIS may not uniformly capture or disseminate data on training and certifications across different administrative levels. This could create gaps in data-driven decision-making for professional development programs.

Recommendations
To strengthen the system, the EMIS should adopt a unified framework for tracking professional development at all administrative levels, with a particular focus on improving ministry-level oversight. Training modules for administrators and schools on standardized data entry and reporting protocols should be prioritized. Additionally, a periodic review mechanism should be established to ensure consistency in the data and to address gaps or uncertainties in tracking. Centralized dashboards summarizing professional development statistics could facilitate better planning and resource allocation across schools and regions.

2_2C1h. Does the EMIS track data on professional development tracking number of trainings completed?

Table 1.71
2_2C1h_L * 2_2C1h * ID Crosstabulation

Count							
ID			2_2C1h				Total
			1	2	3	9	
1	2_2C1h_L	1	1				1
	Total		1				1
2	2_2C1h_L	1			1		1
	Total				1		1
3	2_2C1h_L	0	3	1	0	2	6
		1	5	2	2	0	9
	Total		8	3	2	2	15
Total	2_2C1h_L	0	3	1	0	2	6
		1	6	2	3	0	11
	Total		9	3	3	2	17

General Trends

The EMIS system demonstrates some capacity to track the number of professional development trainings completed, with 11 affirmative responses. The majority of these responses originate at the school level (L=1), indicating that most tracking occurs at the point of implementation. The dzongkhag level (L=2) and the ministry level (L=3) have fewer positive responses, suggesting limited regional and central tracking of training data. Additionally, six responses indicate uncertainty (category 3), highlighting some inconsistencies in awareness or implementation across levels.

Item-by-Item Analysis
At the school level (L=1), six affirmative responses confirm that tracking mechanisms for completed trainings are more established at this level. The dzongkhag level (L=2) contributes two positive responses, and the ministry level (L=3) has three. However, the presence of uncertainty (category 3) at all levels, particularly at the dzongkhag and ministry levels, suggests a lack of clarity or uniform application of tracking procedures. This uneven distribution implies that while schools may actively track trainings, this information may not be consistently aggregated or utilized at higher levels.

Key Contradictions
A notable contradiction is the relatively low number of affirmative responses at the dzongkhag and ministry levels, despite their roles in oversight and resource allocation for professional development. Additionally, the existence of uncertainties at all levels underscores gaps in communication, training, or the availability of tracking tools. This inconsistency may hinder data-driven decision-making for professional development planning and evaluation.

Recommendations
To address these gaps, the EMIS should establish a standardized framework for tracking completed trainings across all levels, with clear guidelines and training for users at the school, dzongkhag, and ministry levels. Regular audits and feedback loops should be implemented to ensure data consistency and accuracy. A centralized reporting mechanism could enable seamless aggregation and analysis of training data, thereby supporting strategic decisions on professional development priorities and resource allocation. Awareness campaigns or workshops can further clarify the importance and procedures for tracking training completions.

2_2C1i. Does the EMIS track data on Ministry of Finance data regarding human resources (if applicable)?

Table 1.72
2_2C1i_L * 2_2C1i * ID Crosstabulation

Count								
ID			2_2C1i					Total
			0	1	2	3	9	
1	2_2C1i_L	3	1					1
	Total		1					1
2	2_2C1i_L	1				1		1
	Total					1		1
3	2_2C1i_L	0		0	2	0	3	5
		1		6	1	3	0	10
	Total			6	3	3	3	15

Total	2_2C1i_L	0	0	0	2	0	3	5
		1	0	6	1	4	0	11
		3	1	0	0	0	0	1
	Total		1	6	3	4	3	17

General Trends

The EMIS system shows limited capacity to track Ministry of Finance data on human resources. Out of 17 responses, only 11 affirmatively indicate that such data is tracked, with the majority coming from the school level (L=1). There are some responses at the dzongkhag level (L=2), but very few at the ministry level (L=3), highlighting uneven data collection and usage across levels. Notably, there are five instances of uncertainty (category 3), reflecting ambiguity or lack of implementation in tracking mechanisms.

Item-by-Item Analysis

At the school level (L=1), six responses confirm the ability to track Ministry of Finance data, while the dzongkhag level (L=2) contributes three responses, suggesting limited engagement. Only one affirmative response from the ministry level (L=3) highlights a significant gap in centralized oversight and integration of human resources data. The presence of three instances of uncertainty (category 3) across dzongkhag and ministry levels suggests inconsistent practices or unclear expectations regarding data tracking.

Key Contradictions

A notable contradiction is the minimal affirmative response at the ministry level, despite its critical role in managing human resource data and ensuring financial accountability. The uncertainty observed across dzongkhag and ministry levels further highlights a disconnect in communication and operational clarity, impeding comprehensive data tracking. This could limit the EMIS's ability to effectively use Ministry of Finance data for strategic planning and decision-making.

Recommendations

To bridge these gaps, the EMIS should enhance its mechanisms for integrating Ministry of Finance data on human resources across all levels. Standardized protocols and clear responsibilities for tracking should be established, particularly at the dzongkhag and ministry levels. Training programs and awareness campaigns can help clarify the importance and processes of data collection and integration. Additionally, leveraging digital platforms to centralize data storage and sharing can improve accessibility and accuracy, ensuring that critical financial and human resource data are effectively utilized for planning and policy-making.

Table 1.73

SWOT Analysis for Human Resources Data

Strength	Weakness
Localized Tracking Excellence Comprehensive data tracking at the school level (L=1) for teaching staff, non-teaching staff, salary details, attendance, and professional development activities. Strong engagement at dzongkhag levels (L=2) for salary tracking, classroom observation, and performance evaluation.	**Gaps in Centralized Oversight** Limited data tracking at the ministry level (L=3) for all categories, including teaching and non-teaching staff, salaries, classroom observation, and attendance. Critical oversight issues in professional development and Ministry of Finance human resources data tracking.

Foundation for Financial Oversight Moderate tracking of Ministry of Finance human resource data at school and dzongkhag levels. Effective localized tracking of completed training programs. **Grassroots Implementation** Schools demonstrate consistent compliance with EMIS protocols for various datasets, indicating robust localized engagement.	**Inconsistent Regional Engagement** Dzongkhags show moderate but uneven engagement, with tracking gaps in key areas like salary and professional development. **Systematic Issues in Data Categorization** High frequency of unmapped or uncertain responses across all levels, indicating deficiencies in system design and clarity. **Fragmentation and Silos** Absence of standardized protocols creates regional disparities and reduces data utility for strategic decision-making.
Opportunities	**Threats**
Standardization and Integration Develop unified protocols for data tracking across all levels to reduce inconsistencies and enhance data quality. Implement centralized dashboards for aggregated data to inform policy-making and resource allocation. **Capacity Building** Conduct targeted training programs at dzongkhag and ministry levels to improve compliance and understanding of EMIS protocols. Enhance stakeholder awareness on the importance of data accuracy and reliability. **Technological Improvements** Introduce automated data validation and mapping tools to address unmapped and uncertain responses. Integrate real-time updates and reporting mechanisms into the EMIS. **Policy Alignment** Align classroom observation and professional development tracking with broader national educational goals.	**Fragmented Data Utility** Uneven data tracking across operational levels risks undermining the utility of the EMIS for strategic planning and decision-making. **Data Integrity Risks** Unmapped responses and inconsistencies reduce confidence in the reliability and completeness of the data. **Regional Disparities** Lack of uniform implementation risks creating disparities in data quality and performance evaluation across regions. **Resource and Policy Impacts** Gaps in centralized tracking and integration limit the ability to allocate resources effectively and support evidence-based policymaking.

1.4.4 Learning Outcomes Data

The EMIS contains learning outcomes data.

Benchmark ⇒ Latent | Emerging | Established | Advanced

√

The EMIS tracks basic learning outcomes, including grade tracking and classroom assessments, but implementation is uneven. Schools demonstrate localized engagement, while regional (dzongkhag) and central (ministry) levels show inconsistent or minimal contributions. Data lacks standardization, limiting its utility for policy-making and interventions.

The EMIS system demonstrates Emerging capability in tracking learning outcome data, with strong school-level engagement but critical gaps at dzongkhag and ministry levels. By standardizing practices, enhancing stakeholder training, and leveraging technology, the system can move toward an Established level, enabling effective tracking and integration of learning outcomes across all administrative tiers.

2_2D1a. Does the system track learning outcome data, including grades?

Table 1.74
2_2D1a_L * 2_2D1a * ID Crosstabulation

Count					
ID			2_2D1a		Total
			0	1	
2	2_2D1a_L	3		1	1
	Total			1	1
3	2_2D1a_L	1	0	8	8
		2	2	1	3
		3	0	1	1
	Total		2	10	12
4	2_2D1a_L	1	54	126	180
		2	2	2	4
		3	10	19	29
	Total		66	147	213
Total	2_2D1a_L	1	54	134	188
		2	4	3	7
		3	10	21	31
	Total		68	158	226

General Trends
The EMIS system demonstrates a strong capacity to track grades at the school level (L=1), with 134 affirmative responses out of 158 total responses. This is particularly evident in schools, which contribute the bulk of the data. However, the ability to track grades diminishes significantly at higher levels, with only three affirmative responses at the dzongkhag level (L=2) and 21 at the ministry level (L=3). This suggests a centralized system for grade tracking is underutilized or fragmented across levels.

Item-by-Item Analysis
At the school level (L=1), a high number of affirmative responses (126 from schools) underscores a robust mechanism for tracking grades. However, at the dzongkhag level (L=2), only three responses confirm tracking capabilities, with four instances indicating no such tracking. At the ministry level (L=3), grade tracking is confirmed in 21 cases, though it accounts for less than half of the responses from this level. This variability highlights a lack of standardization in data management across administrative tiers.

Key Contradictions
The primary contradiction lies in the limited tracking capabilities at the dzongkhag and ministry levels, despite their roles in overseeing education data. This disconnect between centralized and decentralized levels could hinder the comprehensive analysis of student performance trends.

Furthermore, the presence of negative responses at higher levels, despite substantial tracking at the school level, points to issues in data flow, integration, or reporting mechanisms between schools and higher administrative tiers.

Recommendations

To enhance the EMIS's effectiveness in tracking grade data, efforts should focus on standardizing data reporting and integration across all levels. Implementing centralized data management systems accessible by dzongkhags and ministries can improve oversight and analytical capabilities. Training and capacity-building initiatives should be conducted to ensure consistent data collection and reporting practices at all levels. Additionally, creating feedback loops between schools and higher levels can ensure data accuracy and timely updates, enabling a cohesive approach to monitoring student learning outcomes.

2_2D1b. Does the system track learning outcome data, including national assessments?

Table 1.75

2_2D1b_L * 2_2D1b * ID Crosstabulation

Count					
ID			2_2D1b		Total
			0	1	
1	2_2D1b_L	0		1	1
	Total			1	1
2	2_2D1b_L	3	1		1
	Total		1		1
3	2_2D1b_L	1	1	3	4
		2	1	3	4
		3	3	1	4
	Total		5	7	12
4	2_2D1b_L	1	72	63	135
		2	3	4	7
		3	18	46	64
	Total		93	113	206
Total	2_2D1b_L	0	0	1	1
		1	73	66	139
		2	4	7	11
		3	22	47	69
	Total		99	121	220

General Trends

The EMIS shows notable capability in tracking national assessment data, particularly at the school level (L=1), with 66 affirmative responses, constituting over half of the total "Yes" responses. Tracking at the ministry level (L=3) is also relatively strong, with 47 affirmatives, but there is a significant drop at the dzongkhag level (L=2), with only seven affirmatives out of 11 total responses. This disparity highlights gaps in data collection or reporting across administrative levels.

Item-by-Item Analysis

At the school level (L=1), 66 responses confirm the system's ability to track national assessments, emphasizing a robust mechanism at the grassroots level. The dzongkhag level (L=2) shows weaker

engagement, with only seven affirmatives and four negatives, indicating inconsistent practices. At the ministry level (L=3), 47 positive responses demonstrate substantial tracking capability, yet 22 negative responses suggest areas for improvement in integration or data flow. The sole affirmative response from GovTech at the national level indicates limited involvement in direct data tracking.

Key Contradictions

The most significant contradiction is the limited tracking capacity at the dzongkhag level compared to the school and ministry levels. This weak link may result in fragmented data collection and hinder the ability to analyze or leverage national assessment data comprehensively. Additionally, the relatively high number of negative responses at the ministry level contrasts with its role as a central authority, suggesting potential issues in data aggregation or system coverage.

Recommendations

To strengthen the EMIS's ability to track national assessment data comprehensively, standardizing data collection protocols and integration across all levels is critical. Dzongkhag-level capacities should be enhanced through targeted training and resource allocation, ensuring alignment with schools and ministries. Establishing centralized dashboards accessible to all administrative levels can facilitate real-time data sharing and monitoring. Lastly, routine audits of the EMIS should be conducted to identify and address gaps in data tracking, ensuring consistent and reliable reporting of national assessment outcomes.

2_2D1ci. Does the system track learning outcome data, including classroom assessments at the class level?

Table 1.76

2_2D1ci_L * 2_2D1ci * ID Crosstabulation

Count						
ID			2_2D1ci			Total
			0	1	3	
1	2_2D1ci_L	1			1	1
	Total				1	1
2	2_2D1ci_L	3	1			1
	Total		1			1
3	2_2D1ci_L	1	0	6		6
		2	0	3		3
		3	2	2		4
	Total		2	11		13
4	2_2D1ci_L	1	73	114		187
		2	1	1		2
		3	8	14		22
	Total		82	129		211
Total	2_2D1ci_L	1	73	120	1	194
		2	1	4	0	5
		3	11	16	0	27

	Total	85	140	1	226

General Trends
The EMIS demonstrates strong tracking capabilities for classroom assessments at the class level (L=1), with 140 affirmative responses out of 226 total responses, reflecting robust mechanisms at the school level. Tracking declines significantly at the dzongkhag level (L=2) with only four affirmative responses and one negative, indicating underutilization or inconsistent practices. At the ministry level (L=3), there is moderate tracking capacity with 16 affirmative responses, although this level accounts for fewer responses overall.

Item-by-Item Analysis
At the school level (L=1), 129 affirmatives versus 73 negatives indicate that most schools effectively use the EMIS to track classroom assessments, though some gaps remain. The dzongkhag level (L=2) presents a stark contrast, with only four affirmative responses and one negative, suggesting significant inconsistencies. The ministry level (L=3) sees 16 affirmative responses, indicating moderate but not comprehensive engagement in tracking classroom assessments. GovTech and PPD provided minimal data, with a single affirmative response each.

Key Contradictions
The most apparent contradiction lies in the dzongkhag level's limited engagement in tracking classroom assessments, despite its intermediary role between schools and ministries. This gap could hinder the flow and aggregation of data at higher levels. Additionally, the substantial proportion of negative responses at the school level (L=1) highlights disparities in how classroom assessments are tracked and integrated into the EMIS.

Recommendations
To address these gaps, prioritizing the standardization of classroom assessment tracking protocols across all levels is essential. Providing training and resources at the dzongkhag level (L=2) will help bridge the gap between schools and the ministry, ensuring consistent practices. Schools (L=1) should be equipped with tools and training to reduce negative responses, and regular audits should identify non-compliance or technical challenges. Furthermore, integrating classroom assessment data into a centralized EMIS dashboard accessible to all stakeholders will improve data visibility and usability across levels.

2_2Dcii. Does the system track learning outcome data, including classroom assessments at the individual student level (1 on 1 meetings between student and teacher)?

Table 1.77
2_2D1cii_L * 2_2D1cii * ID Crosstabulation

Count					
ID			2_2D1cii		Total
			0	1	
1	2_2D1cii_L	0		1	1
	Total			1	1
2	2_2D1cii_L	3	1		1
	Total		1		1
3	2_2D1cii_L	1	3	5	8

		2	2	1	3
		3	2	0	2
	Total		7	6	13
4	2_2D1cii_L	1	115	79	194
		2	2	1	3
		3	10	2	12
	Total		127	82	209
Total	2_2D1cii_L	0	0	1	1
		1	118	84	202
		2	4	2	6
		3	13	2	15
	Total		135	89	224

General Trends

The EMIS shows varying capabilities in tracking classroom assessments at the individual student level (1-on-1 meetings between students and teachers). Out of 224 responses, 89 affirmative responses indicate the system is somewhat capable, particularly at the school level (L=1). However, the dzongkhag level (L=2) and ministry level (L=3) exhibit significantly lower engagement, with only 2 and 2 affirmative responses, respectively. The majority of engagement is concentrated at the school level, where 79 out of 202 responses were positive.

Item-by-Item Analysis

At the school level (L=1), 84 affirmative responses suggest that many schools track individual student assessments, but 118 negative responses highlight inconsistencies. The dzongkhag level (L=2) shows limited engagement, with only 2 affirmatives and 4 negatives. Similarly, the ministry level (L=3) has 2 affirmative responses and 13 negatives, indicating minimal involvement. GovTech and PPD contributed only one affirmative response each, reflecting negligible participation.

Key Contradictions

The stark contrast between the school level's moderate engagement and the dzongkhag and ministry levels' minimal involvement creates a disconnect in the data flow. While schools track some individual assessments, the lack of integration or oversight at higher levels undermines the system's potential for comprehensive data aggregation and policy-making. Additionally, the significant number of negative responses at the school level points to disparities in implementation or access to resources.

Recommendations

To improve tracking of individual student assessments, prioritize standardizing data collection protocols across all levels. Schools should be equipped with tools and training to ensure consistent use of the EMIS for this purpose. At the dzongkhag and ministry levels, develop mechanisms to integrate and oversee school-level data, ensuring it feeds into a centralized system. Regular audits and feedback loops will help identify gaps and address them effectively. Strengthening collaboration among GovTech, PPD, and dzongkhags can further streamline the tracking process and improve the quality of learning outcome data.

2_2D2. Are student learning outcomes linked to their respective teachers through assessment data?

Table 1.78
2_2D2_L * 2_2D2 * ID Crosstabulation

Count						
ID			2_2D2			Total
			0	1	3	
1	2_2D2_L	0			1	1
	Total				1	1
2	2_2D2_L	3		1		1
	Total			1		1
3	2_2D2_L	1	0	4		4
		2	0	4		4
		3	2	3		5
	Total		2	11		13
4	2_2D2_L	1	87	103		190
		2	4	1		5
		3	12	6		18
	Total		103	110		213
Total	2_2D2_L	0	0	0	1	1
		1	87	107	0	194
		2	4	5	0	9
		3	14	10	0	24
	Total		105	122	1	228

General Trends

The EMIS exhibits a mixed capability in linking student learning outcomes to their respective teachers through assessment data. Out of 228 responses, 122 affirmative responses indicate that some institutions are successfully implementing this practice, primarily at the school level (L=1), with 107 positive responses. Engagement decreases significantly at the dzongkhag level (L=2) with only 5 affirmative responses and further at the ministry level (L=3) with 10 affirmatives. This indicates a strong reliance on school-level implementation without robust integration at higher levels.

Item-by-Item Analysis

At the school level (L=1), 107 affirmative responses suggest moderate engagement in linking student learning outcomes to teachers, but 87 negative responses highlight areas of inconsistency. The dzongkhag level (L=2) has limited engagement, with 5 affirmatives against 4 negatives, reflecting minimal implementation. At the ministry level (L=3), the balance is slightly better with 10 affirmative responses against 14 negatives, but the overall level of engagement remains low. GovTech and PPD reported only one positive response each, indicating minimal involvement.

Key Contradictions

The significant reliance on school-level data tracking contrasts sharply with the minimal engagement at the dzongkhag and ministry levels, creating a fragmented system. The lack of robust mechanisms to link outcomes to teachers at higher levels suggests gaps in oversight and coordination. Additionally, the relatively high number of negative responses at all levels indicates inconsistencies in the implementation of this linkage, even where it is reportedly practiced.

Recommendations

To enhance the linkage between student learning outcomes and teachers, prioritize developing a unified framework that mandates this practice across all levels of operation. Schools should be equipped with user-friendly tools to facilitate the tracking of assessment data, while dzongkhag and ministry levels must establish oversight mechanisms to ensure data integration and utilization. Regular training sessions for all stakeholders, combined with periodic audits, can address inconsistencies and reinforce the importance of this practice. A centralized database, accessible to all levels, will further strengthen the integration of this critical data.

2_2D3. Do parents have direct access to student performance data?

Table 1.79
2_2D3_L * 2_2D3 * ID Crosstabulation

Count					
ID			2_2D3		Total
			0	1	
1	2_2D3_L	1		1	1
	Total			1	1
2	2_2D3_L	3	1		1
	Total		1		1
3	2_2D3_L	1	0	9	9
		2	0	5	5
		3	1	0	1
	Total		1	14	15
4	2_2D3_L	1	101	75	176
		2	2	1	3
		3	22	12	34
	Total		125	88	213
Total	2_2D3_L	1	101	85	186
		2	2	6	8
		3	24	12	36
	Total		127	103	230

General Trends
The availability of direct parental access to student performance data is moderately implemented, as reflected by 103 affirmative responses out of 230 total responses (44.8%). The majority of positive responses occur at the school level (L=1) with 85 affirmatives, indicating that schools are the primary operational level where this feature is utilized. Access at the dzongkhag (L=2) and ministry levels (L=3) is limited, with only 6 and 12 affirmative responses, respectively. This suggests that parental access to performance data is largely localized to individual schools.

Item-by-Item Analysis
At the school level (L=1), 85 affirmative responses against 101 negatives highlight a split, with a significant number of schools not yet providing this access. At the dzongkhag level (L=2), 6 affirmative responses show minimal implementation, with 2 negative responses indicating this feature is rarely available at this operational tier. Similarly, the ministry level (L=3) exhibits low engagement, with only 12 affirmative responses compared to 24 negatives. GovTech and PPD contribute a single affirmative response each, indicating minimal involvement in facilitating parental access.

Key Contradictions
The major contradiction lies in the substantial number of schools (L=1) lacking parental access to student performance data, despite their central role in student management. Furthermore, while dzongkhag and ministry levels report limited engagement in providing access, their oversight capabilities are critical for institutionalizing this feature. The lack of standardization across levels creates discrepancies, leaving parents in certain regions or schools without access.

Recommendations
To improve parental access to student performance data, establish a centralized, user-friendly digital platform integrated with the EMIS that enables real-time updates accessible to parents. Mandate schools to adopt the system uniformly, supported by training for school staff on its operation. The dzongkhag and ministry levels should oversee compliance, with regular monitoring and reporting mechanisms to identify gaps. A feedback mechanism for parents can also ensure the system meets their needs and facilitates timely improvements.

2_2D4. Does the system track data on students that need remedial help?

Table 1.80
2_2D4_L * 2_2D4 * ID Crosstabulation

Count					
ID			2_2D4		Total
			0	1	
1	2_2D4_L	1		1	1
	Total			1	1
3	2_2D4_L	1	2	3	5
		2	2	2	4
		3	3	1	4
	Total		7	6	13
4	2_2D4_L	1	89	104	193
		2	0	3	3
		3	11	2	13
	Total		100	109	209
Total	2_2D4_L	1	91	108	199
		2	2	5	7
		3	14	3	17
	Total		107	116	223

General Trends
The EMIS moderately tracks data on students requiring remedial help, with 116 affirmative responses out of 223 total (52%). Most of these affirmative responses are concentrated at the school level (L=1), where 108 responses indicate that this is a common practice. The dzongkhag level (L=2) and ministry level (L=3) have significantly fewer positive responses, with only 5 and 3 affirmatives, respectively. This highlights a gap in tracking remedial needs beyond individual schools.

Item-by-Item Analysis
At the school level (L=1), 108 affirmative responses against 91 negatives demonstrate significant implementation, but still with room for improvement. The dzongkhag level (L=2) exhibits minimal tracking, with only 5 affirmative responses. The ministry level (L=3) reports even lower

engagement, with just 3 affirmatives. GovTech shows no direct engagement in this area, as reflected in the data. The limited affirmative responses at higher operational levels suggest a lack of systemic support and oversight.

Key Contradictions

A major contradiction exists between the school-level implementation and the dzongkhag/ministry-level oversight. While schools actively track students needing remedial help, the lack of support and integration at higher levels limits the scalability and uniformity of such interventions. Additionally, the absence of tracking by some schools further undermines the overall effectiveness of the system in addressing student needs.

Recommendations

To ensure comprehensive tracking of students requiring remedial help, the EMIS should integrate a standardized, centralized reporting framework applicable across all operational levels. Training and resources should be provided to schools to enhance data entry accuracy and compliance. At the dzongkhag and ministry levels, monitoring mechanisms should be strengthened to analyze trends and allocate resources efficiently. Furthermore, introducing predictive analytics within the EMIS can proactively identify students at risk, enabling earlier interventions and more equitable support across regions.

2_2D5. Are the EMIS clients (teachers, parents, students) able to track student performance in various subjects/classes?

Table 1.81

2_2D5_L * 2_2D5 * ID Crosstabulation

Count					
ID			2_2D5		Total
			0	1	
1	2_2D5_L	1		1	1
	Total			1	1
2	2_2D5_L	1		1	1
	Total			1	1
3	2_2D5_L	1	4	1	5
		2	2	1	3
		3	3	1	4
	Total		9	3	12
4	2_2D5_L	1	52	136	188
		2	3	0	3
		3	12	13	25
	Total		67	149	216
Total	2_2D5_L	1	56	139	195
		2	5	1	6
		3	15	14	29
	Total		76	154	230

General Trends
The ability of EMIS clients (teachers, parents, and students) to track student performance in various subjects/classes is reported by 154 out of 230 responses (67%), indicating moderate adoption. Most of the affirmative responses originate from school-level operations (L=1), with 139 affirmatives compared to only 56 negatives. Tracking is significantly less common at the dzongkhag (L=2) and ministry (L=3) levels, with only 1 affirmative at L=2 and 14 affirmatives at L=3.

Item-by-Item Analysis
At the school level (L=1), the high number of affirmative responses (139) indicates that the tracking of student performance is well-established, but the remaining 56 negatives reveal that some schools lack this functionality. The dzongkhag level (L=2) shows minimal tracking activity, with only 1 affirmative response and 5 negatives. The ministry level (L=3) has a slightly better implementation, with 14 affirmative responses, but this is still limited given the scope of operations at that level.

Key Contradictions
A key contradiction lies in the disparity between school-level tracking and its integration at higher operational levels. While most schools appear to offer tracking capabilities, dzongkhags and ministries demonstrate limited involvement. This lack of system-wide integration restricts the scalability and consistency of tracking, hindering its potential as a unified monitoring tool across regions and levels.

Recommendations
To improve tracking capabilities for student performance across subjects/classes, the EMIS should focus on standardizing tracking systems across all operational levels. This includes creating centralized dashboards that allow dzongkhag and ministry levels to access school-level data seamlessly. Training programs for EMIS clients (teachers, parents, and students) should emphasize the use of tracking features to increase engagement. Additionally, policies should incentivize schools and higher authorities to adopt and integrate these features into their routine practices, ensuring consistent data availability and usability.

Table 1.82
SWOT Analysis for Learning Outcome Data

Strength	Weakness
Strong Localized Implementation The school level (L=1) consistently demonstrates robust engagement across various domains, including grade tracking, national and classroom assessments, and student performance tracking. Affirmative responses often exceed 100, underscoring the EMIS's capacity to monitor and manage localized educational data effectively. A foundational system is present for linking student outcomes, tracking remedial needs, and enabling	**Fragmented Integration Across Levels** Minimal engagement at the dzongkhag level (L=2) highlights regional oversight gaps, reducing the system's ability to act as a cohesive monitoring tool. Inconsistent tracking practices and negative responses across levels indicate uneven implementation and adoption, particularly in linking student outcomes, classroom assessments, and remedial needs. **Lack of Standardization**

parental access, signaling the potential for broader adoption. **Centralized Involvement** Moderate engagement at the ministry level (L=3) in key areas such as grade tracking, national assessments, and student performance indicates emerging centralized oversight and policy alignment. **Opportunity for Data-Driven Interventions** Existing systems at the school level create a foundation for enhancing transparency and enabling data-driven decisions to improve learning outcomes and resource allocation.	Discrepancies in reporting protocols and tracking mechanisms lead to data silos, reducing the utility of the EMIS for strategic planning and policy-making. **Underutilization by Stakeholders** High numbers of negative responses and uncertain implementation across various domains suggest limited awareness, training, and technical capacity among stakeholders.
Opportunities	**Threats**
Standardize Protocols Develop and implement uniform tracking and reporting standards across all levels (school, dzongkhag, ministry) to ensure consistent data collection and integration. Focus on underperforming areas, such as dzongkhag-level engagement and centralized oversight. **Enhance Training and Awareness** Conduct targeted training programs for school staff, dzongkhag administrators, and ministry personnel to improve data management and compliance. Increase awareness among parents and teachers about the benefits and functionalities of EMIS tools to drive adoption and effective usage. **Leverage Technology for Centralization** Introduce centralized dashboards and automated data integration systems to facilitate real-time updates and seamless communication across operational levels. Incorporate predictive analytics to identify students at risk and support proactive interventions. **Establish Feedback Mechanisms** Enable continuous feedback loops between schools, dzongkhags, and ministries to ensure timely updates, improve data accuracy, and align with national educational goals.	**Fragmentation and Inequity** Risk: Silos between operational levels may perpetuate regional disparities and hinder system-wide cohesion. Mitigation: Ensure system-wide integration and centralized oversight by developing inter-level communication channels and incentivizing compliance with standardized practices. **Inconsistent Implementation** Risk: Gaps in school-level tracking and regional discrepancies may compromise data reliability and utility. Mitigation: Allocate resources to underperforming schools and regions, and establish minimum standards for tracking and reporting. **Stakeholder Resistance or Inertia** Risk: Limited engagement due to a lack of training, awareness, or perceived value of EMIS tools. Mitigation: Foster stakeholder buy-in through advocacy campaigns, showcasing success stories, and emphasizing the benefits of EMIS adoption for all users. **Scalability Challenges** Risk: Unaddressed gaps in dzongkhag and ministry-level implementation may limit the system's scalability and impact. Mitigation: Gradually expand functionality, prioritizing critical areas like grade tracking and national assessments, while providing incremental support to higher levels.

1.5 Data Analytics

Tools and processes are available to perform data analytics at different levels on a regular basis.

Benchmark ⇒ Latent | Emerging | Established | Advanced

√

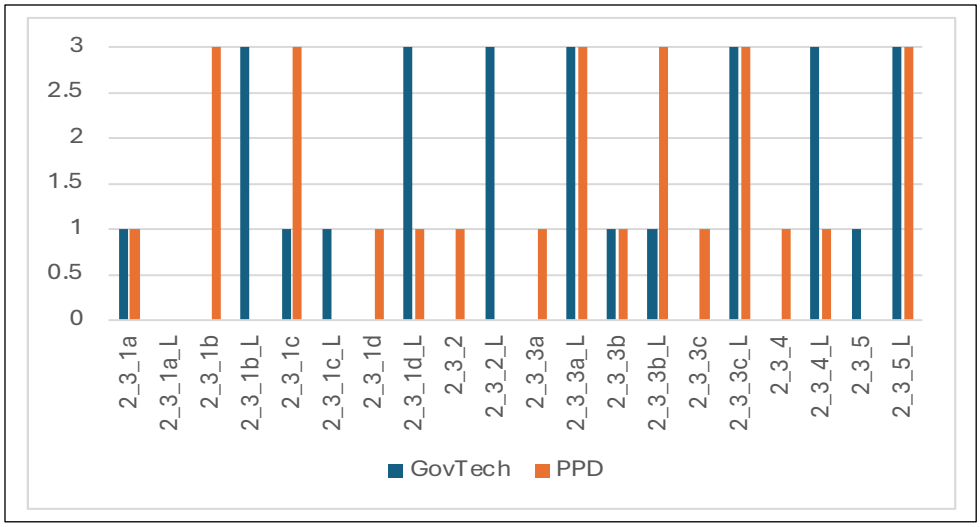
At the Emerging level, tools and processes for data analytics are partially developed, with basic capabilities like descriptive analysis and simple data associations available but advanced tools for projections, predictive modeling, and scenario analysis either absent or inconsistently accessible. Processes are primarily centralized at the Ministry level (Level 3) and not fully integrated into regular workflows, resulting in irregular and limited outputs that are underutilized in decision-making. Minimal engagement and capacity-building efforts at Dzongkhag (Level 2) and School (Level 1) levels hinder decentralization, while limited training leaves technical expertise inconsistent across operational levels.

The data analytics capabilities are rated as Emerging, reflecting foundational processes and tools but significant gaps in decentralization, tool availability, and alignment between agencies. Addressing these issues through harmonized evaluations, training, and standardization of tools will elevate the system to the Established level, ensuring comprehensive analytics functionality at all operational levels.

Table 1.83
Items for Data Analytics

Item	Statement
2_3	Are there processes to perform different levels of analysis generally, and for the below listed tasks?
2_3_1a	Descriptive data analysis (e.g., describing specific features of information)?
2_3_1b	Data tabulations (e.g., summarizing data based on different indicators such as teacher-student ratio by region, relationship between school attendance and learning)?
2_3_1c	Data associations (e.g., relations between data indicators or different data fields such as behavioral issues and school leadership)?
2_3_1d	Correlations (e.g., determining causality and effects across different parameters)?
2_3_2	Are there tools to perform different levels of analysis (e.g., SPSS, STATA, R and open-source statistical analysis tools)?
2_3_3a	Is the system capable of producing projections (e.g., population projections)?
2_3_3b	Is the system capable of producing Predictive models (e.g., estimation and prediction techniques)?
2_3_3c	Is the system capable of producing Scenario analysis (what-if analysis)?
2_3_4	How often does the system produce outputs of these data analytics (choose one "yes" answer below) (once a year, twice a year, more frequently)?
2_3_5	Can data analytics be performed within the EMIS to inform decision-making?

Figure 1.3
Responses to Items in Table 1.84



General Trends

The data indicates that both GovTech and PPD acknowledge some processes and tools for performing data analytics within the EMIS. However, responses show significant variability between the two agencies, with PPD reporting greater capabilities in areas like tabulations (2_3_1b), data associations (2_3_1c), and projections (2_3_3a), while GovTech reports stronger capabilities for descriptive analytics (2_3_1a) and predictive modeling (2_3_3b). The operational levels predominantly focus on Level 3 (Ministry), with minimal acknowledgment of activity at Dzongkhag (L=2) or School (L=1) levels, indicating limited decentralization of data analytics processes.

Item-by-Item Analysis

2_3_1a: Both GovTech and PPD affirm the presence of descriptive data analysis processes ("Yes" [1]). However, GovTech does not report a specific operational level, while PPD identifies no activity at Level 1.

2_3_1b: PPD affirms the presence of data tabulation processes ("Yes" [3]) at Level 3, while GovTech denies their availability ("No" [0]) entirely, highlighting a potential gap in functionality or awareness.

2_3_1c: Both agencies confirm the presence of data association processes, but GovTech identifies Level 1 as the operational level, while PPD reports no specific operational level.

2_3_1d: PPD affirms processes for correlations at Level 3, while GovTech denies their availability, indicating gaps in advanced statistical capabilities.

2_3_2: PPD reports tools for analysis (e.g., SPSS, R) at Level 3, while GovTech denies the presence of such tools, signaling discrepancies in technical resource allocation.

2_3_3a: PPD affirms the system's capability for projections at Level 3, while GovTech denies it, suggesting unequal access to or understanding of projection tools.

2_3_3b: Both agencies affirm predictive modeling capabilities, but GovTech associates this with Level 1, while PPD identifies Level 3 as operational.

2_3_3c: PPD reports scenario analysis capabilities at Level 3, while GovTech denies their presence, highlighting differences in reported system functionality.

2_3_4: PPD affirms regular outputs of data analytics at Level 3, while GovTech denies this capability entirely.

2_3_5: GovTech affirms the ability to perform data analytics for decision-making at Level 3, while PPD denies this capability.

Key Contradiction

Key contradictions include PPD affirming tools and processes for advanced analytics (e.g., projections, scenario analysis) while GovTech denies them. Additionally, GovTech identifies some operational activities at Level 1, while PPD focuses exclusively on Level 3, reflecting a misalignment in perceived decentralization and resource distribution.

Recommendations

To improve data analytics capabilities, both agencies should conduct joint evaluations of tools and processes to harmonize understanding and identify areas of misalignment. Investing in training and capacity-building at Levels 1 (School) and 2 (Dzongkhag) is essential to decentralize analytics capabilities and foster greater engagement across all operational levels. Additionally, tools for data analysis, such as SPSS and R, should be standardized and made available at all levels to reduce discrepancies in functionality and access. Establishing regular reporting mechanisms is also crucial to ensure consistent outputs of data analytics and their effective integration into decision-making processes.

Table 1.84

SWOT Analysis for Data Analytics

Strength	**Weakness**
Both agencies acknowledge foundational analytics processes like descriptive analysis and data associations, with centralized oversight at the Ministry level.	Limited decentralization, inconsistent tool availability, and gaps in advanced analytics capabilities hinder full system functionality.
Opportunities	**Threats**
Expanding tool access, decentralizing processes, and improving technical training can enhance analytics engagement and system-wide decision-making.	Misalignment between agencies and uneven distribution of technical resources may perpetuate inefficiencies and undermine analytics reliability.

1.6 Dynamic System

General Standrd: The system in place is elastic and easily adaptable to allow for changes/advancements in data needs.

1.6.1 Quality Assurance Measures

Standard: The system is dunamic and maintains quality asurance measures.

Benchmark ⇒ Latent | Emerging | Established | Advance

√

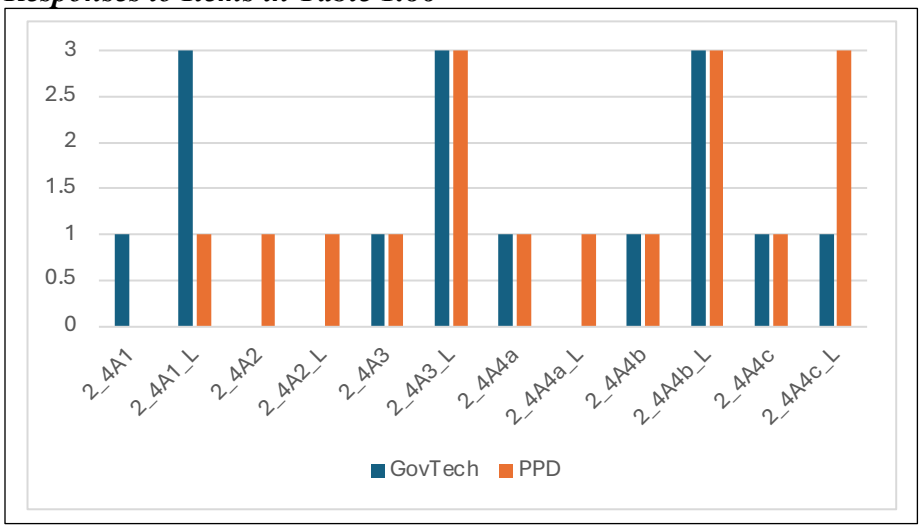
Basic quality assurance measures are in place, including some internal or external reviews and monitoring systems. Implementation is inconsistent and predominantly centralized at Level 3, with limited engagement at lower levels.

The quality assurance measures are rated as Emerging, reflecting foundational systems for monitoring and external reviews but significant gaps in decentralization, internal reviews, and alignment with internationally recognized frameworks. Progressing to the Established level will require formal adoption of quality assurance frameworks, consistent application of internal reviews, and decentralization of monitoring processes.

Table 1.85
Items for Quality Assurance Measures

Item	Statement
2_4A1	Does the EMIS follow internationally recognized quality assurance measures such as the Total Quality Management Approach or ISO 9000? (The ISO 9000 focuses on the framework for quality management, providing guidance on how to manage for quality and perform internal audits)
2_4A2	Has the EMIS been reviewed internally for quality assurance measures? If yes, detail frequency in comments section.
2_4A3	Has the EMIS been reviewed externally such as by an auditing agency or quality management agency?
2_4A4a	Is there a system in place within the EMIS that monitors regularly the data collection?
2_4A4b	Is there a system in place within the EMIS that monitors regularly the data processing?
2_4A4c	Is there a system in place within the EMIS that monitors regularly the data dissemination of education statistics?

Figure 1.4
Responses to Items in Table 1.86



General Trends

The responses indicate that both GovTech and PPD acknowledge the presence of foundational quality assurance measures within the EMIS, such as external reviews (2_4A3) and systems for monitoring data collection, processing, and dissemination (2_4A4a, 2_4A4b, 2_4A4c). However, there is variability in operational levels, with GovTech primarily identifying Level 3 (Ministry) for most processes, while PPD reports some activities at Level 1 (School) or Level 3. Additionally, PPD affirms internal reviews (2_4A2), whereas GovTech does not report on this item, suggesting gaps in internal quality management practices.

Item-by-Item Analysis

2_4A1: GovTech reports adherence to internationally recognized quality assurance measures like ISO 9000 at Level 3, while PPD denies their use, associating operational activities with Level 1, highlighting a disconnect in implementation or awareness.

2_4A2: Internal reviews are affirmed by PPD at Level 1 but are not reported by GovTech, indicating inconsistencies in internal quality assurance practices or reporting.

2_4A3: Both agencies confirm that external reviews are conducted, identifying Level 3 as the operational level, suggesting strong centralized oversight of external quality assurance.

2_4A4a–2_4A4c: Both agencies agree on the presence of systems to monitor data collection, processing, and dissemination, though operational levels vary. GovTech associates monitoring activities with Level 3, while PPD identifies Level 1 or Level 3, reflecting some decentralization in data dissemination processes.

Key Contradictions

Contradictions arise in the use of internationally recognized quality assurance frameworks, where GovTech affirms their use, and PPD denies it. Additionally, PPD reports internal reviews, while GovTech does not, indicating a misalignment in internal quality assurance practices. Variability in reported operational levels for monitoring systems further underscores gaps in decentralization and alignment between the agencies.

Recommendations

To improve quality assurance measures, both agencies should conduct joint evaluations to harmonize their understanding and implementation of internationally recognized frameworks such as ISO 9000. Internal reviews should be institutionalized and consistently applied across all levels, with clear documentation and feedback loops. Decentralizing quality assurance processes to include Dzongkhag (Level 2) and School (Level 1) levels can enhance system engagement and accountability. Capacity-building initiatives and standardized operational guidelines should be introduced to address discrepancies in practices and reporting.

Table 1.86

SWOT Analysis for Quality Assurance Measures

Strength	**Weakness**
External reviews and systems for monitoring data collection, processing, and dissemination are in place, demonstrating foundational quality assurance practices.	Lack of alignment on internal reviews and recognized frameworks, coupled with limited decentralization, hinders comprehensive quality assurance.
Opportunities	**Threats**
Adopting and harmonizing international frameworks (e.g., ISO 9000) and decentralizing quality assurance processes can enhance system reliability and engagement.	Misalignment between agencies and insufficient middle-tier (Dzongkhag) involvement could undermine the consistency and effectiveness of quality assurance efforts.

1.6.2 Data Requirements and Considerations

Standard: There are mechanisms for addressing new and emerging data requirements.

Benchmark ⇒ Latent | Emerging | Established | Advanced

√

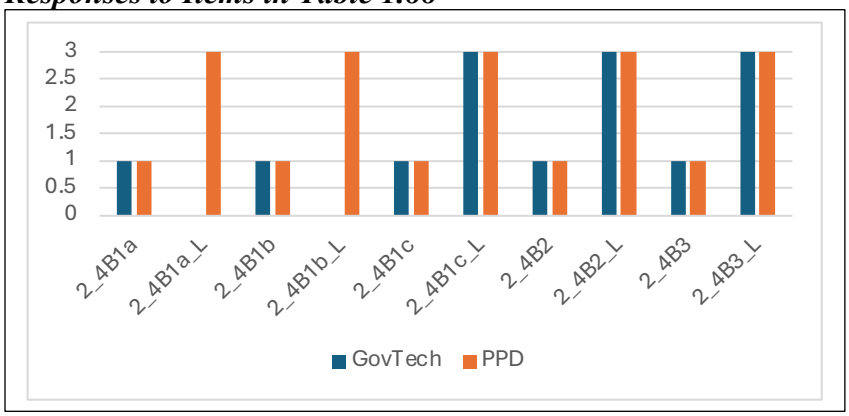
Basic mechanisms are in place for addressing new and emerging data requirements, but they are not consistently applied or fully institutionalized. Periodic meetings with stakeholders occur, but their scope and frequency are limited, primarily focusing on reviewing existing indicators and reports rather than actively identifying and addressing new requirements. While data aggregation and disaggregation are possible, occasional challenges arise, and the system demonstrates limited adaptability to integrate new data fields seamlessly. Engagement remains centralized at Level 3 (Ministry), with minimal involvement of Dzongkhag (L=2) or School (L=1) levels, limiting the system's ability to respond to localized data needs effectively.

The mechanisms for addressing new and emerging data requirements are rated as Emerging. While foundational mechanisms such as stakeholder meetings, data aggregation, and adaptability exist, their centralization and inconsistent application across levels prevent full institutionalization. Progressing to the Established level will require decentralization, automation, and consistent engagement across all operational levels to ensure the system is dynamic and responsive to evolving data needs.

Table 1.87
Items for Data Requirements and Considerations

Item	Statement
2_4B1a	Are meetings with stakeholders and other data users held periodically to: Review the existing portfolio of education indicators?
2_4B1b	Are meetings with stakeholders and other data users held periodically to: Review the existing education reports?
2_4B1c	Are meetings with stakeholders and other data users held periodically to: Identify any emerging data requirements?
2_4B2	Can data be aggregated or disaggregated without any difficulties?
2_4B3	Is the system able to adapt to new data requirements (e.g., ability of the system to integrate any new student demographic data such as family data into the existing system)?

Figure 1.5
Responses to Items in Table 1.88



General Trends

The data reveals that both GovTech and PPD acknowledge the existence of mechanisms to address data requirements, including periodic stakeholder meetings (2_4B1a–2_4B1c), aggregation and disaggregation of data (2_4B2), and the system's adaptability to new data requirements (2_4B3). The operational levels are predominantly reported at Level 3 (Ministry), with PPD indicating some

involvement at Level 3 for stakeholder meetings. However, there is limited engagement at Levels 1 (School) and 2 (Dzongkhag), reflecting a lack of decentralization.

Item-by-Item Analysis

2_4B1a–2_4B1c: Both agencies affirm that periodic meetings with stakeholders occur to review indicators, reports, and emerging data requirements. While PPD consistently reports Level 3 as the operational level, GovTech varies, with some items lacking reported operational levels.

2_4B2: Both agencies confirm that data aggregation and disaggregation are possible without significant difficulties, with Level 3 identified as the operational level.

2_4B3: Both agencies affirm the system's adaptability to new data requirements, with operations centralized at Level 3.

Key Contradictions

No major contradictions are evident in the responses, as both agencies align on the presence of mechanisms for data aggregation, adaptability, and stakeholder engagement. However, the absence of Level 1 and Level 2 involvement indicates a disconnect in operational decentralization.

Recommendations

To enhance mechanisms for addressing emerging data requirements, GovTech and PPD should decentralize stakeholder meetings to include Dzongkhag and School levels, ensuring that local perspectives inform data needs. Automation tools should be implemented to facilitate seamless data aggregation, disaggregation, and integration of new requirements. Finally, the frequency and scope of stakeholder meetings should be standardized to cover comprehensive reviews and proactive identification of emerging data requirements.

Table 1.88

SWOT Analysis for Data Requirements and Considerations

Strength	**Weakness**
Both agencies affirm the presence of mechanisms for stakeholder engagement, data aggregation, and adaptability to new requirements, ensuring foundational responsiveness.	Limited decentralization and inconsistent operational engagement at Levels 1 and 2 hinder the comprehensive identification of local data needs.
Opportunities	**Threats**
Expanding stakeholder engagement to all operational levels and incorporating automation tools can enhance the system's ability to address evolving data requirements.	Over-reliance on centralized processes may reduce the system's responsiveness to regional and school-level needs, potentially undermining data relevance.

1.6.3 System Adaptability

Standard: The EMIS is elastic and easily adaptable to allow for changes and/or advancements in data needs.

Benchmark ⇒ Latent | Emerging | Established | Advanced

√

At the Emerging level, the EMIS exhibits some basic adaptability to changes in data needs but remains limited in scope and consistency. The system may respond to simple changes, such as

adding new functionalities or accommodating redistricting, but struggles with integrating new technologies or working with legacy systems. Adaptability is primarily centralized at the Ministry level (L=3), with minimal engagement or functionality at Dzongkhag (L=2) and School (L=1) levels. Mechanisms for addressing adaptability are not fully institutionalized or consistently applied.

The EMIS is currently rated at the Emerging level for system adaptability. While there is evidence of responsiveness to changes in school arrangements and added functionalities, the system demonstrates limited capability to integrate new technologies and work with legacy systems consistently across all levels. To progress to the Established level, the EMIS must institutionalize adaptability mechanisms, decentralize engagement to include Dzongkhag (L=2) and School (L=1) levels, and enhance integration capabilities with new and existing systems.

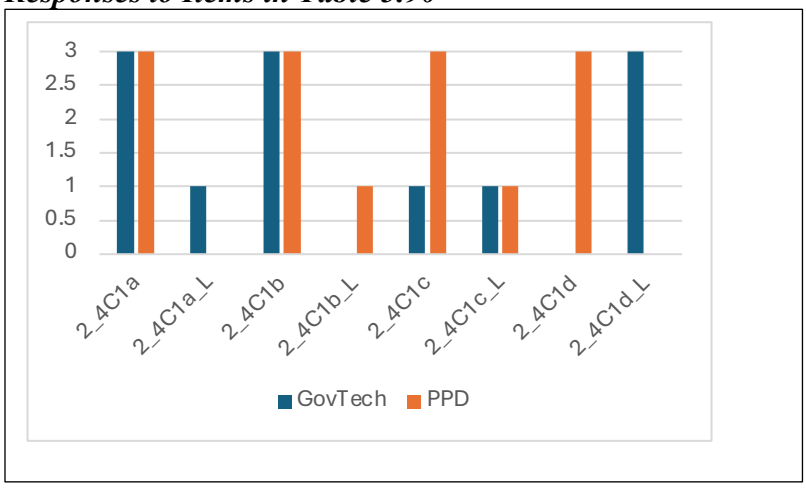
Table 1.89

Items for System Adaptability

Item	Statement
2_4C1a	Is the EMIS adaptable to changes in new school arrangements (e.g., redistricting)?
2_4C1b	Is the EMIS adaptable to changes in added functionalities (e.g., new reported data specifically for that school)?
2_4C1c	Is the EMIS adaptable to changes in new technologies?
2_4C1d	Is the EMIS adaptable to changes in able to work with current legacy systems if needed?

Figure 1.6

Responses to Items in Table 3.90



General Trends

The data indicates varying levels of adaptability in the EMIS as perceived by GovTech and PPD. Both agencies agree on the system's ability to adapt to changes in school arrangements (2_4C1a) and added functionalities (2_4C1b), but diverge on adaptability to new technologies (2_4C1c) and integration with legacy systems (2_4C1d). The operational levels for adaptability are predominantly at Level 3 (Ministry), with limited engagement reported at Level 1 (School) or Level 2 (Dzongkhag). These patterns highlight a centralized approach to system adaptability, with inconsistent functionality at decentralized levels.

Item-by-Item Analysis

2_4C1a: Both GovTech and PPD affirm the EMIS's adaptability to changes in school arrangements, with GovTech associating it with Level 1 (School) and PPD not reporting operational levels.

2_4C1b: Both agencies agree that the system adapts to added functionalities, but only PPD identifies an operational level, associating it with Level 1.

2_4C1c: PPD affirms the system's adaptability to new technologies at Level 3, whereas GovTech acknowledges adaptability but restricts its operation to Level 1, reflecting a discrepancy in perceived engagement.

2_4C1d: PPD affirms adaptability to legacy systems at Level 3, while GovTech denies this capability entirely, showing a gap in technical integration across agencies.

Key Contradictions

A key contradiction arises in adaptability to legacy systems (2_4C1d), where PPD affirms this capability, while GovTech denies it. Additionally, GovTech limits adaptability to Level 1 for certain items, while PPD consistently associates adaptability with Level 3, indicating a potential misalignment in perceptions or operational priorities between the two agencies.

Recommendations

To enhance system adaptability, both agencies should prioritize the decentralization of adaptability mechanisms to include Dzongkhag (L=2) and School (L=1) levels, ensuring that localized needs are addressed. Joint evaluations and standardization of processes for integrating new technologies and legacy systems are necessary to reduce discrepancies. Capacity-building initiatives focused on decentralized adaptability and technical integration should be implemented to strengthen the system's elasticity across all operational levels.

Table 1.90

SWOT Analysis for System Adaptability

Strength	**Weakness**
The system demonstrates adaptability to changes in school arrangements and added functionalities, with centralized oversight at Level 3.	Limited engagement at decentralized levels (L=1, L=2) and gaps in adaptability to new technologies and legacy systems hinder comprehensive functionality.
Opportunities	**Threats**
Decentralizing adaptability mechanisms and standardizing technical integration processes can improve system responsiveness and inclusivity.	Misalignment between agencies and insufficient capacity at decentralized levels could undermine the system's ability to respond effectively to changing data needs.

1.7 Serviceability

General Standard: Services provided by the system are valid across data sources, integrate non-education databases into the EMIS, and archive data at the service of EMIS clients by ensuring the relevance, consistency, usefulness, and timeliness of its statistics.

1.7.1 Validity across Data Sources

Standard: Information brought together from different data and/or statistical frameworks in the EMIS is placed within the data warehouse using structural and consistency measures.

Benchmark ⇒ Latent | Emerging | Established | Advanced

√

While some integration and validation measures are in place, the system is not yet fully standardized or consistent across all levels. Data accuracy may be limited by gaps in error management, system compatibility, and adoption across lower levels.

The EMIS system is rated Emerging for its ability to maintain validity across data sources. While there are significant strengths in data integration and validation at the Ministry level, challenges remain in ensuring consistent data practices and integration at lower levels. Addressing gaps in system compatibility, adoption, and data integration at the Dzongkhag and School levels, as well as improving technical infrastructure, will enhance the system's ability to provide reliable and comprehensive data for decision-making.

2_5A1. Is information that is brought together from different data and/or statistical frameworks in the EMIS is placed within the data warehouse?

Table 1.91

2_5A1_L * 2_5A1 * ID Crosstabulation

Count						
ID			2_5A1			Total
			0	1	3	
1	2_5A1_L	1			1	1
	Total				1	1
2	2_5A1_L	3		1		1
	Total			1		1
3	2_5A1_L	1	2	0		2
		2	2	3		5
		3	1	5		6
	Total		5	8		13
Total	2_5A1_L	1	2	0	1	3
		2	2	3	0	5
		3	1	6	0	7
	Total		5	9	1	15

General Trends

The majority of responses indicate that information from different data and/or statistical frameworks is placed in the EMIS data warehouse. Specifically, 9 responses (60%) answered "Yes," while 6 responses (40%) answered "No." Most affirmative responses were linked to operations at the Dzongkhag (L=2) and Ministry (L=3) levels, indicating a more robust integration of data at higher administrative levels compared to the school level.

Item-by-Item Analysis

At the school level (L=1), only 1 respondent indicated that data integration is in place, highlighting limited implementation at this level. At the Dzongkhag level (L=2), 3 responses confirmed data

integration, with 2 responses stating otherwise, suggesting inconsistent practices. At the Ministry level (L=3), 6 responses affirmed integration into the data warehouse, showcasing the strongest alignment across operations at this level. This disparity reflects a potential gap in data integration processes across different administrative levels.

Key Contradictions

Contradictions emerge between the reported data integration practices at the school and Dzongkhag levels. For instance, some respondents at the Dzongkhag level reported that data is not integrated, even though higher-level confirmations (Ministry) suggest otherwise. Similarly, the single affirmative response at the school level contradicts the overall trend of limited data integration at this level, suggesting a possible miscommunication or lack of uniform implementation.

Recommendation

To enhance the validity of data integration across administrative levels within the EMIS, it is recommended to standardize data integration processes by developing clear guidelines and providing targeted training programs for stakeholders at all levels. Collaboration between schools, Dzongkhags, and the Ministry should be strengthened to ensure consistency and address discrepancies in practices. Additionally, investing in technical infrastructure and financial resources at the school level is essential to enable seamless integration with the central data warehouse. Finally, regular monitoring and evaluation of data integration practices should be implemented to identify and rectify gaps, ensuring the reliability and comprehensiveness of the EMIS data.

2_5A2. Are data collection instruments carefully designed to avoid duplication of information and lengthy processes in compiling data?

Table 1.92

2_5A2_L * 2_5A2 * ID Crosstabulation

Count					
ID			2_5A2		Total
			0	1	
2	2_5A2_L	3		1	1
	Total			1	1
3	2_5A2_L	1	1	3	4
		2	1	3	4
		3	2	3	5
	Total		4	9	13
Total	2_5A2_L	1	1	3	4
		2	1	3	4
		3	2	4	6
	Total		4	10	14

General Trends

The responses indicate that most stakeholders affirm that data collection instruments are designed to avoid duplication and lengthy processes, with 10 out of 14 responses (71%) being positive. Responses are distributed across different levels, with higher agreement at Level 3 (Ministry) and balanced feedback at Level 1 (School) and Level 2 (Dzongkhag).

Item-by-Item Analysis
At Level 1, only one positive response indicates that improvements might be needed at the school level. At Level 2, there is a balanced response distribution (1 "No" and 3 "Yes"), indicating some discrepancies in processes. At Level 3, responses skew positively, with 4 affirmations and 2 negatives, suggesting better alignment of data collection tools at the Ministry level.

Key Contradictions
The main contradiction arises at Level 2, where equal proportions of positive and negative responses suggest inconsistent application or understanding of data collection tools. Additionally, at Level 3, the existence of two negative responses contrasts with the majority positive feedback, hinting at potential process gaps or dissatisfaction among some stakeholders.

Recommendations
To enhance the design of data collection instruments, a collaborative review process involving stakeholders across all levels is essential. The review should aim to standardize tools, reduce redundancies, and address identified gaps, especially at Level 2. Training sessions can be conducted to ensure stakeholders understand and effectively use the tools. Regular monitoring and feedback mechanisms will help refine these instruments and maintain alignment with operational requirements.

2_5A3. Are key variables reconciled across the databases in the data warehouse?

Table 1.93
2_5A3_L * 2_5A3 * ID Crosstabulation

Count					
ID			2_5A3		Total
			0	1	
1	2_5A3_L	3		1	1
	Total			1	1
2	2_5A3_L	3		1	1
	Total			1	1
3	2_5A3_L	1	2	0	2
		2	1	3	4
		3	3	4	7
	Total		6	7	13
Total	2_5A3_L	1	2	0	2
		2	1	3	4
		3	3	6	9
	Total		6	9	15

General Trends
The responses indicate a moderate level of reconciliation of key variables across databases in the data warehouse, with 9 out of 15 responses (60%) being positive. Responses are more affirmative at Levels 2 (Dzongkhag) and 3 (Ministry), while Level 1 (School) has no positive feedback, highlighting potential gaps at the school level.

Item-by-Item Analysis
At Level 1, both responses are negative, indicating no reconciliation of key variables at the school level. At Level 2, 3 out of 4 responses are positive, suggesting progress in reconciling data at the Dzongkhag level. Level 3 shows the highest positive feedback, with 6 affirmations out of 9 responses, reflecting greater integration efforts at the Ministry level.

Key Contradictions
The main contradiction lies in the disparity between Levels 1 and 3. While Level 3 demonstrates significant reconciliation efforts, Level 1 lacks any affirmative responses. Additionally, the single negative response at Level 2 suggests incomplete alignment or occasional lapses in the process at the Dzongkhag level.

Recommendations
To improve the reconciliation of key variables, priority should be given to addressing gaps at Level 1 by implementing standardized processes and providing training for school-level stakeholders. At Level 2, consistency in data reconciliation practices can be ensured through routine audits and capacity-building initiatives. At Level 3, the Ministry can leverage its existing success by developing a framework to support lower levels, ensuring uniform reconciliation practices across all levels.

2_5A4. Are data compilation procedures managed in a way that minimizes processing errors such as coding, editing, and tabulation errors?

Table 1.94
2_5A4_L * 2_5A4 * ID Crosstabulation

Count					
ID			2_5A4		Total
			0	1	
1	2_5A4_L	1		1	1
	Total			1	1
2	2_5A4_L	1		1	1
	Total			1	1
3	2_5A4_L	1	2	2	4
		2	3	1	4
		3	3	2	5
	Total		8	5	13
Total	2_5A4_L	1	2	4	6
		2	3	1	4
		3	3	2	5
	Total		8	7	15

General Trends
The responses suggest that data compilation procedures are moderately well-managed, with 7 out of 15 responses (47%) indicating positive outcomes. Levels 1 and 2 (School and Dzongkhag) show more limited positive feedback compared to Level 3 (Ministry), which demonstrates stronger adherence to practices minimizing processing errors.

Item-by-Item Analysis
At Level 1, both responses are affirmative, indicating effective management of data compilation procedures at the school level for the given cases. Level 2 shows a balanced split, with 3 negative responses and 1 positive, highlighting inconsistent practices at the Dzongkhag level. At Level 3, 5 out of 8 responses affirm the minimization of processing errors, suggesting better oversight and error management at the Ministry level.

Key Contradictions
The primary contradiction lies in the inconsistency at Level 2, where positive and negative responses coexist, indicating uneven implementation of data error minimization processes. Furthermore, while Level 1 responses are fully affirmative, the limited number of responses raises questions about the generalizability of these results across schools.

Recommendations
To enhance the minimization of processing errors, it is recommended that clear and standardized guidelines for data coding, editing, and tabulation be developed and disseminated across all levels. Level 2 requires targeted interventions, including training and monitoring, to ensure consistency in error management practices. Additionally, leveraging Level 3's existing strengths, the Ministry can implement automated error-checking tools and provide resources to support lower levels, fostering uniformity and reducing manual errors across all levels of operation.

2_5A5. Are the total statistics consistent or reasonable within a dataset and over time?

Table 1.95
2_5A5_L * 2_5A5 * ID Crosstabulation

Count					
ID			2_5A5		Total
			0	1	
1	2_5A5_L	1		1	1
	Total			1	1
2	2_5A5_L	1	1		1
	Total		1		1
3	2_5A5_L	1	0	1	1
		2	2	3	5
		3	0	7	7
	Total		2	11	13
Total	2_5A5_L	1	1	2	3
		2	2	3	5
		3	0	7	7
	Total		3	12	15

General Trends
The responses indicate that total statistics are consistent or reasonable within a dataset and over time. Out of 15 total responses, 12 (80%) affirm positive practices across all levels of operation. The strongest performance is observed at Level 3 (Ministry), where all 7 responses are affirmative. However, there are mixed responses at Level 1 (School) and Level 2 (Dzongkhag), highlighting room for improvement in these areas.

Item-by-Item Analysis
At Level 1, only one response is affirmative, suggesting a limited but positive implementation of error-minimization practices. Level 2 shows a split, with 2 negative responses and 3 positive ones, indicating inconsistency in practices at the Dzongkhag level. At Level 3, the responses are unanimously positive, reflecting strong procedures and controls at the Ministry level to manage and reduce processing errors.

Key Contradictions
A key contradiction exists at Level 2, where the presence of both positive and negative responses points to uneven application of best practices across Dzongkhags. Level 1's limited number of responses makes it difficult to assess whether the observed positive response reflects the broader practices at the school level.

Recommendations
To strengthen total statistics consistent or reasonable within a dataset and over time at all levels, it is recommended that standard operating procedures (SOPs) for minimizing errors be developed and enforced uniformly. Level 2 requires targeted training programs to address inconsistencies and ensure adherence to best practices. At Level 1, a larger-scale assessment should be conducted to verify the applicability of the current procedures and identify areas needing intervention. Furthermore, Level 3's robust error management framework can be used as a model to guide and support other levels, ensuring that all administrative units benefit from consistent, high-quality practices.

2_5A6. Are the final statistics consistent or reasonable within a dataset and over time?

Table 1.96
2_5A6_L * 2_5A6 * ID Crosstabulation

Count					
ID			2_5A6		Total
			0	1	
1	2_5A6_L	1		1	1
	Total			1	1
2	2_5A6_L	1	1		1
	Total		1		1
3	2_5A6_L	1	1	0	1
		2	3	2	5
		3	3	4	7
	Total		7	6	13
Total	2_5A6_L	1	2	1	3
		2	3	2	5
		3	3	4	7
	Total		8	7	15

General Trends
The responses suggest that the final statistics are moderately consistent and reasonable within datasets and over time. Out of 15 total responses, 7 (47%) affirm consistency and reasonableness across all levels of operation. Level 3 (Ministry) demonstrates the strongest positive feedback,

with 4 affirmatives out of 7 responses. Levels 1 (School) and 2 (Dzongkhag) show mixed results, with a balance of affirmatives and negatives, indicating varying degrees of effectiveness.

Item-by-Item Analysis
At Level 1, only one positive response was recorded, reflecting limited evidence of consistent statistics at the school level. At Level 2, there are 2 positive and 3 negative responses, pointing to inconsistency at the Dzongkhag level in ensuring the reliability of final statistics. Level 3 has the highest proportion of positive responses, with 4 out of 7 affirmatives, suggesting a reasonably strong framework at the Ministry level to maintain statistical consistency.

Key Contradictions
A key contradiction is observed at Level 2, where the presence of both affirmative and negative responses indicates uneven implementation of practices to ensure consistent statistics. Level 1's limited data presents a challenge in determining whether the single affirmative response represents broader trends or isolated success.

Recommendations
To improve consistency in final statistics across datasets and over time, it is recommended to establish a centralized monitoring framework with automated validation checks. Level 3 (Ministry) can serve as a model, as it demonstrates relatively stronger practices. At Level 2, targeted capacity-building initiatives and enhanced oversight are necessary to address inconsistencies. Level 1 requires a more detailed assessment to identify challenges specific to schools and implement tailored interventions. Furthermore, consistent communication and collaboration across all levels of operation should be promoted to ensure alignment in data handling practices.

2_5A7. Are consistent time series data available for an adequate period of time (at least five years)?

Table 1.97
2_5A7_L * 2_5A7 * ID Crosstabulation

Count					
ID			2_5A7		Total
			0	1	
1	2_5A7_L	1		1	1
	Total			1	1
2	2_5A7_L	3	1		1
	Total		1		1
3	2_5A7_L	1	0	2	2
		2	2	2	4
		3	2	4	6
	Total		4	8	12
Total	2_5A7_L	1	0	3	3
		2	2	2	4
		3	3	4	7
	Total		5	9	14

General Trends
The availability of consistent time series data for an adequate period (at least five years) appears to be uneven across different levels of operation. Out of 14 responses, 9 (64%) affirm the presence of such data. Level 3 (Ministry) demonstrates the highest positive responses, with 4 affirmatives out of 7, indicating a relatively stronger data management framework. Levels 1 (School) and 2 (Dzongkhag) show lower levels of affirmation, suggesting gaps in maintaining long-term data consistency.

Item-by-Item Analysis
At Level 1, only one affirmative response indicates limited availability of consistent time series data at the school level. Level 2 shows an even split, with 2 affirmatives and 2 negatives, reflecting inconsistent practices in tracking data over time at the Dzongkhag level. Level 3 exhibits the strongest performance, with 4 affirmatives out of 7, highlighting a relatively well-maintained repository of long-term data at the Ministry level.

Key Contradictions
The primary contradiction is at Level 2, where equal numbers of affirmative and negative responses indicate uneven practices in maintaining time series data. Similarly, Level 1's sole affirmative response makes it unclear whether this represents broader trends or isolated success. At Level 3, the negative responses suggest that some Ministry-level data sources are not yet fully integrated into a consistent framework.

Recommendations
To ensure consistent time series data availability across all levels, it is recommended to establish a unified data management protocol with standardized time-series tracking mechanisms. Level 3 (Ministry) should take the lead in developing and sharing best practices with Level 2 and Level 1. At Level 2, capacity-building efforts and better coordination with schools and the Ministry can address inconsistencies. For Level 1, investments in basic data tracking tools and regular audits are necessary to identify gaps. Additionally, fostering a culture of data stewardship and aligning timelines for data reporting across all levels will enhance long-term consistency and reliability.

2_5A8. Are historical series reconstructed as far back as reasonably possible when changes in source data, methodology, and statistical techniques are introduced?

Table 1.98
2_5A8_L * 2_5A8 * ID Crosstabulation

Count					
ID			2_5A8		Total
			0	1	
1	2_5A8_L	1		1	1
	Total			1	1
2	2_5A8_L	3	1		1
	Total		1		1
3	2_5A8_L	1	0	1	1
		2	4	0	4
		3	4	4	8
	Total		8	5	13
Total	2_5A8_L	1	0	2	2

		2	4	0	4
		3	5	4	9
	Total		9	6	15

General Trends

The reconstruction of historical data series when changes in source data, methodology, or statistical techniques occur is uneven across levels of operation. Out of 15 responses, only 6 (40%) affirm that such practices are in place. Level 3 (Ministry) shows relatively better performance, with 4 affirmatives, indicating that this level is more likely to reconstruct historical data compared to Levels 1 and 2.

Item-by-Item Analysis

At Level 1 (School), only one response affirms the reconstruction of historical data, reflecting significant gaps at the school level. Level 2 (Dzongkhag) shows no affirmative responses, highlighting a complete absence of such practices. Level 3 (Ministry) performs better, with 4 affirmative responses out of 9, indicating some capacity for reconstructing historical data but also revealing room for improvement.

Key Contradictions

The key contradiction is between Level 3's relatively higher capacity to reconstruct historical data and the complete lack of such practices at Level 2. While the Ministry demonstrates partial compliance, the absence of reconstruction at the Dzongkhag level may create gaps in the overall data ecosystem. Furthermore, the sole affirmative response at Level 1 may represent an outlier rather than a trend.

Recommendations

To improve the reconstruction of historical data series, it is recommended to develop clear guidelines and standardized methodologies that can be implemented across all levels of operation. The Ministry should take the lead by establishing templates and tools for historical data reconstruction and providing training to Dzongkhags and schools. Level 2 (Dzongkhag) requires targeted interventions, including resource allocation and technical support, to build capacity. Regular audits and feedback loops should be introduced to ensure compliance and identify challenges early. By integrating these practices, the system can enhance the validity of longitudinal analyses and support evidence-based decision-making.

2_5A9. Is the emphasis for consistency placed on the final statistics instead of the preliminary publications?

Table 1.99

2_5A9_L * 2_5A9 * ID Crosstabulation

Count					
ID			2_5A9		Total
			0	1	
1	2_5A9_L	1		1	1
	Total			1	1
2	2_5A9_L	3	1		1
	Total		1		1
3	2_5A9_L	1	1	1	2

		2	0	3	3
		3	5	3	8
	Total		6	7	13
Total	2_5A9_L	1	1	2	3
		2	0	3	3
		3	6	3	9
	Total		7	8	15

General Trends

The emphasis on final statistics over preliminary publications varies across levels of operation. Out of 15 responses, 8 (53%) indicate that the emphasis is placed on final statistics, reflecting a moderate level of adherence to best practices. Level 3 (Ministry) shows the highest number of affirmative responses (3 out of 9), indicating relatively better alignment at the central level compared to Levels 1 and 2.

Item-by-Item Analysis

At Level 1 (School), there is only one affirmative response, highlighting significant gaps at the grassroots level. Level 2 (Dzongkhag) has three affirmative responses, showing slightly better performance but still requiring substantial improvement. Level 3 (Ministry) stands out with three affirmative responses, suggesting that the central level is more likely to prioritize final statistics, though this is not consistently applied across all cases.

Key Contradictions

The key contradiction lies in the disparity between Level 3's stronger performance and the minimal affirmative responses at Levels 1 and 2. While the Ministry places more emphasis on final statistics, the lack of a similar focus at lower levels could result in inconsistencies in data reliability across the system. This gap undermines the integrity of statistical outputs and their comparability over time.

Recommendations

To ensure consistent emphasis on final statistics, it is essential to establish standardized data management protocols that prioritize accuracy over expediency at all levels. The Ministry should provide clear guidelines and training to Dzongkhags and schools, emphasizing the importance of final statistics for decision-making. A centralized review system should be introduced to verify and reconcile preliminary and final data at all levels. Additionally, integrating technology for real-time data validation and reporting can minimize errors and improve the reliability of final statistics. By fostering a culture of accuracy, the EMIS can enhance its credibility and utility as a decision-support tool.

2_5A10. Are electronic databases validated by data-producing units?

Table 1.100

2_5A10_L * 2_5A10 * ID Crosstabulation

Count					
ID			2_5A10		Total
			0	1	
1	2_5A10_L	1		1	1
	Total			1	1

2	2_5A10_L	3	1		1
	Total		1		1
3	2_5A10_L	1	1	0	1
		2	1	2	3
		3	4	5	9
	Total		6	7	13
Total	2_5A10_L	1	1	1	2
		2	1	2	3
		3	5	5	10
	Total		7	8	15

General Trends
The validation of electronic databases by data-producing units appears moderately implemented across all levels of operation. Out of 15 responses, 8 (53%) indicate that databases are validated. Level 3 (Ministry) demonstrates the highest number of affirmative responses (5 out of 10), suggesting relatively better validation processes at the central level compared to Levels 1 and 2.

Item-by-Item Analysis
At Level 1 (School), there is only one affirmative response, highlighting a significant gap in database validation at the grassroots level. Level 2 (Dzongkhag) shows moderate performance with two affirmative responses. Level 3 (Ministry) stands out with five affirmative responses, reflecting a more structured approach to database validation, although there is still room for improvement.

Key Contradictions
The main contradiction lies in the disparity between the strong performance of Level 3 and the minimal implementation at Levels 1 and 2. While the Ministry emphasizes database validation, the lack of similar practices at lower levels could compromise the overall integrity and consistency of the data system. This inconsistency undermines the reliability of the EMIS as a unified platform.

Recommendations
To enhance database validation across all levels, a standardized framework should be implemented, ensuring that data-producing units at every level are trained and equipped to validate electronic databases. The Ministry should establish periodic audits and cross-verification protocols to monitor compliance and address discrepancies. Leveraging automated validation tools and integrating real-time error detection mechanisms can further improve accuracy. Finally, fostering collaboration between data-producing units and higher administrative levels can create a culture of accountability and consistency, thereby strengthening the reliability of the EMIS.

2_5A11. Are pre-existing or other data collection and management systems (i.e., not considered part of the EMIS) compatible with similar functions for the EMIS?

Table 1.101
2_5A11_L * 2_5A11 * ID Crosstabulation

Count					
ID			2_5A11		Total
			0	1	
1	2_5A11_L	1		1	1

	Total			1	1
3	2_5A11_L	1	1	0	1
		2	2	1	3
		3	4	5	9
	Total		7	6	13
Total	2_5A11_L	1	1	1	2
		2	2	1	3
		3	4	5	9
	Total		7	7	14

General Trends
The compatibility of pre-existing or other data collection and management systems with the EMIS is moderately supported, with half of the responses (7 out of 14) indicating compatibility. The majority of affirmative responses are from Level 3 (Ministry), which accounted for 5 out of 9 responses. Levels 1 and 2 show limited compatibility, with only one affirmative response at each level.

Item-by-Item Analysis
At Level 1 (School), there is only one affirmative response, reflecting a significant lack of integration with pre-existing systems at this level. Level 2 (Dzongkhag) also demonstrates minimal compatibility, with only one affirmative response. Level 3 (Ministry), however, shows better integration with five affirmative responses, suggesting more comprehensive compatibility efforts at the central administrative level.

Key Contradictions
A notable contradiction exists in the disparity between the Ministry's relatively high compatibility and the poor integration observed at the school and dzongkhag levels. This misalignment indicates that while the central systems may be designed with compatibility in mind, lower-level systems are either not equipped or not aligned to interface effectively with the EMIS.

Recommendations
To enhance compatibility across all levels, a uniform integration framework should be established to ensure that pre-existing systems at the school and dzongkhag levels are interoperable with the EMIS. This could include standardizing data formats, adopting common protocols, and providing technical support for system upgrades. Training programs should be conducted to build capacity among data-handling staff at all levels. Additionally, regular audits and feedback mechanisms should be instituted to identify and address gaps in compatibility. A centralized monitoring team could oversee integration efforts and ensure uniformity across all administrative levels.

2_5A12a. Does the system include the following unique identifiers that link databases across years: Student Identifiers?

Table 1.102
2_5A12a_L * 2_5A12a * ID Crosstabulation

Count						
ID			2_5A12a			Total
			0	1	3	
1	2_5A12a_L	3		1		1

	Total			1		1
2	2_5A12a_L	0			1	1
	Total				1	1
3	2_5A12a_L	1	0	3		3
		2	3	0		3
		3	4	1		5
	Total		7	4		11
Total	2_5A12a_L	0	0	0	1	1
		1	0	3	0	3
		2	3	0	0	3
		3	4	2	0	6
	Total		7	5	1	13

General Trends

The use of student identifiers as unique links across years in the EMIS shows moderate implementation, with 5 affirmative responses out of 13 total responses. Most of the positive responses are associated with Level 3 (Ministry), which accounted for 2 affirmative responses. Levels 1 (School) and 2 (Dzongkhag) show less frequent use, with only 3 and 0 affirmative responses, respectively.

Item-by-Item Analysis

At Level 1 (School), the lack of student identifiers suggests limited system sophistication at this level, potentially hindering longitudinal tracking. Level 2 (Dzongkhag) similarly demonstrates a lack of implementation, reflecting possible administrative or resource constraints. Level 3 (Ministry) has the most affirmative responses, indicating that efforts to link databases with student identifiers are primarily concentrated at the central level.

Key Contradictions

A key contradiction lies in the uneven distribution of student identifier implementation, with high adoption at the Ministry level but negligible use at the school and dzongkhag levels. This inconsistency suggests a misalignment in system capabilities or priorities across different administrative levels, potentially leading to fragmented data and limited usefulness for tracking student progress longitudinally.

Recommendations

To achieve uniformity in the use of student identifiers, the Ministry should prioritize expanding the implementation to schools and dzongkhags. This can be achieved by standardizing the data collection processes and ensuring that every student is assigned a unique identifier at the time of enrollment. Training and capacity-building programs for school and dzongkhag administrators should be conducted to familiarize them with the system and its benefits. Additionally, providing technical support and ensuring compatibility across all levels will enhance data consistency and improve the overall functionality of the EMIS. Regular monitoring should be introduced to ensure compliance and identify areas for further improvement.

2_5A12b. Does the system include the following unique identifiers that link databases across years: Teacher Identifiers?

Table 1.103
2_5A12b_L * 2_5A12b * ID Crosstabulation

Count						
ID			2_5A12b			Total
			0	1	3	
1	2_5A12b_L	3	1			1
	Total		1			1
2	2_5A12b_L	1			1	1
	Total				1	1
3	2_5A12b_L	1	0	3		3
		2	4	0		4
		3	4	1		5
	Total		8	4		12
Total	2_5A12b_L	1	0	3	1	4
		2	4	0	0	4
		3	5	1	0	6
	Total		9	4	1	14

General Trends
The integration of teacher identifiers to link databases across years in the EMIS reveals partial implementation, with only 4 affirmative responses out of 14 total responses. These are unevenly distributed, with Level 3 (Ministry) having the majority of positive responses (1), while Level 2 (Dzongkhag) and Level 1 (School) each show fewer or no affirmative responses.

Item-by-Item Analysis
At Level 1 (School), the presence of teacher identifiers is minimal, with only one affirmative response, highlighting limited capacity at this level to track teacher data longitudinally. At Level 2 (Dzongkhag), no positive responses were recorded, suggesting a gap in system capabilities or priorities at this intermediate level. Level 3 (Ministry) shows comparatively better implementation, with some teacher identifiers integrated, reflecting more advanced administrative processes.

Key Contradictions
The stark contrast between the higher adoption at the Ministry level and the negligible implementation at the school and dzongkhag levels underscores a significant system inconsistency. This gap indicates that while centralized systems may be functional, localized systems lack integration, undermining the objective of longitudinal teacher data tracking across all levels of operation.

Recommendations
To address this gap, the Ministry should implement a phased rollout plan to introduce teacher identifiers at school and dzongkhag levels. This requires standardizing teacher data management protocols and ensuring alignment with Ministry-level systems. Training programs should be conducted to equip local administrators with the skills to manage and utilize these identifiers effectively. Furthermore, technical support and resource allocation must be prioritized to enhance the capacity of schools and dzongkhags to integrate teacher identifiers seamlessly into their

systems. Regular audits and feedback loops should be established to ensure consistent application and address any emerging challenges.

2_5A12c. Does the system include the following unique identifiers that link databases across years: Course Codes/ Information Systems?

Table 1.104
2_5A12c_L * 2_5A12c * ID Crosstabulation

Count					
ID			2_5A12c		Total
			0	1	
1	2_5A12c_L	1		1	1
	Total			1	1
3	2_5A12c_L	1	1	3	4
		2	3	0	3
		3	3	3	6
	Total		7	6	13
Total	2_5A12c_L	1	1	4	5
		2	3	0	3
		3	3	3	6
	Total		7	7	14

General Trends
The integration of unique course codes or information systems into the EMIS to link databases across years shows a balanced response, with seven positive responses out of 14 total responses. Level 1 (School) has minimal implementation, with only one affirmative response. Levels 2 (Dzongkhag) and 3 (Ministry) demonstrate higher integration, with three and three affirmative responses, respectively.

Item-by-Item Analysis
At Level 1 (School), there is limited adoption of course codes or information systems, indicating a lack of capacity or infrastructure to implement this functionality at the school level. At Level 2 (Dzongkhag), no positive responses suggest a need for improved integration at this intermediate level. Level 3 (Ministry) displays stronger implementation, reflecting a centralized approach to managing course codes and ensuring consistency across years.

Key Contradictions
The main contradiction lies in the disparity between the levels, with robust implementation at the Ministry level but minimal to no adoption at schools and dzongkhags. This inconsistency creates challenges in achieving comprehensive database linkage and seamless data management across all levels of operation.

Recommendations
To enhance the integration of course codes or information systems, it is essential to expand adoption at school and dzongkhag levels. The Ministry should provide technical resources, standardized protocols, and training to ensure the effective implementation of course codes at all levels. Establishing a centralized system with decentralized access points can facilitate uniform

adoption. Regular monitoring and cross-level audits should be conducted to identify and address any gaps or inconsistencies in implementation.

2_5A13a. Is there a system in place that links the following: Teachers with students?

Table 1.105
2_5A13a_L * 2_5A13a * ID Crosstabulation

Count					
ID			2_5A13a		Total
			0	1	
1	2_5A13a_L	1		1	1
	Total			1	1
2	2_5A13a_L	3		1	1
	Total			1	1
3	2_5A13a_L	1	6	2	8
		2	4	0	4
		3	0	1	1
	Total		10	3	13
Total	2_5A13a_L	1	6	3	9
		2	4	0	4
		3	0	2	2
	Total		10	5	15

General Trends
The presence of a system linking teachers with students within the EMIS demonstrates uneven implementation across levels of operation. Among the 15 total responses, 5 were affirmative. Level 1 (School) had three positive responses, suggesting moderate adoption. However, Level 2 (Dzongkhag) showed no affirmative responses, while Level 3 (Ministry) had two, indicating limited adoption at centralized levels.

Item-by-Item Analysis
Level 1 (School) showed the highest number of affirmative responses, suggesting that some schools have implemented systems to link teachers with students effectively. However, Level 2 (Dzongkhag) lacks any positive responses, indicating no such systems are in place at the intermediate level. At Level 3 (Ministry), the two positive responses suggest some efforts at centralized tracking, but this is not widespread or consistently applied.

Key Contradictions
A key contradiction lies in the disparity between levels. Schools have taken more initiative in implementing teacher-student linkage systems than higher administrative levels like Dzongkhags and Ministries, where implementation would be critical for broader coordination and oversight. The lack of integration at Level 2 further disrupts data flow between schools and the Ministry.

Recommendations
To improve teacher-student linkage across levels, the Ministry should implement a centralized system accessible at all levels to ensure uniform adoption and data consistency. To facilitate integration, schools and Dzongkhags should receive training and technical support. Additionally, establishing mandatory policies for linking teachers with students can enhance data transparency

and coordination, addressing the gaps at Levels 2 and 3. Regular audits and monitoring should also be conducted to ensure system functionality and adoption.

2_5A13b. Is there a system in place that links the following: Teachers with students by course and classroom?

Table 1.106
2_5A13b_L * 2_5A13b * ID Crosstabulation

Count					
ID			2_5A13b		Total
			0	1	
1	2_5A13b_L	3	1		1
	Total		1		1
2	2_5A13b_L	3		1	1
	Total			1	1
3	2_5A13b_L	1	1	6	7
		2	2	0	2
		3	2	1	3
	Total		5	7	12
Total	2_5A13b_L	1	1	6	7
		2	2	0	2
		3	3	2	5
	Total		6	8	14

General Trends
The adoption of systems linking teachers with students by course and classroom is limited, with only 8 out of 14 responses being affirmative. Level 3 (Ministry) had the highest number of positive responses (5), indicating moderate implementation at the centralized level. Levels 1 (School) and 2 (Dzongkhag) showed weaker adoption, with only 1 and 2 positive responses, respectively, suggesting significant gaps at the local and intermediate levels.

Item-by-Item Analysis
At Level 1 (School), only one affirmative response indicates minimal implementation of systems linking teachers with students by course and classroom. Level 2 (Dzongkhag) also has weak adoption, with only two positive responses. However, Level 3 (Ministry) showed comparatively better implementation, with five affirmative responses, suggesting some efforts to centralize and organize such systems at the administrative level.

Key Contradictions
The disparity in responses across levels indicates a lack of coordinated implementation. While the Ministry demonstrates some adoption of teacher-student linkage systems by course and classroom, this is not mirrored at the Dzongkhag or School levels. The absence of robust systems at the grassroots level undermines the centralized efforts, limiting the overall effectiveness of the system.

Recommendations
To improve the linkage of teachers with students by course and classroom, the Ministry should develop and disseminate a standardized framework for implementation at all levels. Training programs for schools and Dzongkhags should focus on system integration and management. The

Ministry should also establish monitoring mechanisms to ensure compliance and functionality. Finally, incentivizing adoption at the local level through grants or recognition programs could enhance the uptake of these systems across all administrative levels.

2_5A14. Is there any roster verification by which by which the list of an individual teacher's students is reviewed by the teacher for accuracy before being used to link teachers and students?

Table 1.107
2_5A14_L * 2_5A14 * ID Crosstabulation

Count					
ID			2_5A14		Total
			0	1	
1	2_5A14_L	3	1		1
	Total		1		1
2	2_5A14_L	3		1	1
	Total			1	1
3	2_5A14_L	1	6	2	8
		2	3	0	3
		3	1	0	1
	Total		10	2	12
Total	2_5A14_L	1	6	2	8
		2	3	0	3
		3	2	1	3
	Total		11	3	14

General Trends
The implementation of roster verification, where teachers review their students' lists for accuracy, is limited across levels. Only 3 of 14 responses indicate the presence of such systems. Level 1 (School) leads with 2 positive responses, followed by Level 3 (Ministry) with 1 affirmative response. Level 2 (Dzongkhag) shows no adoption, highlighting a significant gap in intermediate-level implementation.

Item-by-Item Analysis
At Level 1 (School), 2 affirmative responses suggest minimal adoption of roster verification systems. Level 2 (Dzongkhag) has no positive responses, indicating a complete lack of such systems at this level. Level 3 (Ministry) shows limited implementation with only 1 affirmative response, suggesting that efforts at the centralized level have not fully materialized into actionable systems across all levels.

Key Contradictions
The lack of positive responses at the Dzongkhag level contrasts sharply with the limited adoption at the School and Ministry levels, creating a disjointed implementation landscape. The inconsistency suggests a lack of clear policies or frameworks to establish and manage roster verification processes uniformly across all administrative levels.

Recommendations
To address gaps in roster verification, the Ministry should establish mandatory guidelines for verifying teacher-student rosters, ensuring data accuracy before use. Training and resources should be allocated to support schools and Dzongkhags in adopting these systems. Additionally, a

centralized digital tool for roster verification, accessible to teachers at all levels, could streamline the process and improve consistency. Regular audits and feedback loops should be instituted to monitor compliance and address discrepancies promptly.

2_5A15a. Is the following non-education data collected, integrated and linked in the EMIS: Workforce data?

Table 1.108
2_5A15a_L * 2_5A15a * ID Crosstabulation

Count					
ID			2_5A15a		Total
			0	1	
1	2_5A15a_L	3	1		1
	Total		1		1
2	2_5A15a_L	3		1	1
	Total			1	1
3	2_5A15a_L	1	2	1	3
		2	2	1	3
		3	4	2	6
	Total		8	4	12
Total	2_5A15a_L	1	2	1	3
		2	2	1	3
		3	5	3	8
	Total		9	5	14

General Trends
The integration and linkage of workforce data into the EMIS remain limited, with only 5 of 14 responses indicating such practices. Level 3 (Ministry) shows the highest engagement with 3 affirmative responses, followed by Level 1 (School) and Level 2 (Dzongkhag), each with 1 positive response. This indicates a lack of widespread adoption and integration of workforce data across all levels.

Item-by-Item Analysis
At Level 1 (School), 1 affirmative response highlights minimal integration of workforce data. Level 2 (Dzongkhag) also exhibits a limited effort, with only 1 positive response. Level 3 (Ministry) demonstrates a comparatively better but still insufficient level of integration, with 3 affirmative responses, underscoring the Ministry's relative leadership in this area but highlighting room for improvement.

Key Contradictions
The disparity between the Ministry's moderate adoption and the Dzongkhag and School levels' limited implementation highlights a lack of coordination and uniformity. This inconsistency suggests challenges in cascading policies or technical capacities to link workforce data comprehensively across levels.

Recommendations
To enhance the integration of workforce data into the EMIS, a centralized strategy must be developed and implemented. This strategy should focus on uniform data linkage protocols across all levels. The Ministry should lead by providing technical support, capacity-building initiatives,

and a shared digital platform to facilitate seamless integration. Regular monitoring and evaluation of workforce data linkage should be carried out to ensure compliance and identify gaps. Collaboration with stakeholders at all administrative levels will be critical to ensuring the system's success.

2_5A15b. Is the following non-education data collected, integrated and linked in the EMIS: Labor and Unemployment Insurance (UI) wage records?

Table 1.109
2_5A15b_L * 2_5A15b * ID Crosstabulation

2_5A15b_L * 2_5A15b * ID Crosstabulation				
Count				
ID			2_5A15b	Total
			0	
1	2_5A15b_L	3	1	1
	Total		1	1
3	2_5A15b_L	1	3	3
		2	3	3
		3	6	6
	Total		12	12
Total	2_5A15b_L	1	3	3
		2	3	3
		3	7	7
	Total		13	13

General Trends
The data shows limited integration of labor and Unemployment Insurance (UI) wage records into the EMIS. Of the total responses, none are affirmative, indicating that this type of non-education data is not collected, integrated, or linked within the system. All levels—School (Level 1), Dzongkhag (Level 2), and Ministry (Level 3)—consistently indicate a lack of linkage.

Item-by-Item Analysis
At Level 1 (School), the absence of positive responses highlights the lack of integration of labor and UI wage records. Similarly, Level 2 (Dzongkhag) and Level 3 (Ministry) also report no affirmative responses. The uniformity in responses suggests systemic gaps in collecting or linking non-education data with the EMIS.

Key Contradictions
No explicit contradictions are observed since all levels uniformly report the absence of data integration. However, the lack of affirmative responses may contradict expectations of a robust data management system aiming to link diverse datasets for broader policy implications.

Recommendations
To address the gap in integrating labor and UI wage records, a collaborative framework between education and labor departments should be established. This framework should define the technical specifications, data-sharing protocols, and privacy standards needed for linkage. The Ministry should prioritize this integration by allocating resources for technical enhancements and capacity

building. Pilot programs could be implemented at select Dzongkhag levels to test the feasibility of such integration, with lessons learned used to scale the initiative system-wide.

2_5A15c. Is the following non-education data collected, integrated and linked in the EMIS: Apprenticeship data? (e.g., internships)

Table 1.110
2_5A15c_L * 2_5A15c * ID Crosstabulation

Count						
ID			2_5A15c			Total
			0	1	3	
1	2_5A15c_L	3	1			1
	Total		1			1
2	2_5A15c_L	1			1	1
	Total				1	1
3	2_5A15c_L	1	3	0		3
		2	5	0		5
		3	3	1		4
	Total		11	1		12
Total	2_5A15c_L	1	3	0	1	4
		2	5	0	0	5
		3	4	1	0	5
	Total		12	1	1	14

General Trends
The integration of apprenticeship data (e.g., internships) into the EMIS is notably limited. Across all levels of operation, only 1 affirmative response (Level 3, Ministry) was recorded, highlighting a significant gap in collecting and linking such non-education data.

Item-by-Item Analysis
The integration of apprenticeship data into the EMIS varies across operational levels, with significant gaps observed. At the school level (Level 1), there is no evidence of data collection or integration for apprenticeship programs, indicating a complete lack of implementation at the grassroots level. At the Dzongkhag level (Level 2), no affirmative responses were reported, suggesting that regional operations are also not equipped to manage or link apprenticeship data within the EMIS framework. However, at the ministry level (Level 3), one affirmative response was recorded, indicating some capacity or effort to integrate apprenticeship data, albeit insufficient to demonstrate widespread functionality. This disparity across levels highlights the need for a cohesive strategy that bridges gaps between national policy implementation and local-level execution.

Key Contradictions
A contradiction exists between the affirmative response at Level 3 (Ministry) and the complete absence of integration at Levels 1 and 2. This highlights potential misalignments between policy-level capacities and operational-level execution.

Recommendations
To enhance the integration of apprenticeship data into the EMIS, a unified framework should be developed, focusing on clear protocols for data collection and linkage at all levels. The Ministry should lead initiatives to establish partnerships with apprenticeship programs, ensuring data sharing agreements are in place. Capacity-building efforts at school and Dzongkhag levels will be critical to operationalizing these protocols. Pilot testing at select Dzongkhags should precede a phased rollout, ensuring adaptability and scalability across the EMIS.

2_5A15d. Is the following non-education data collected, integrated and linked in the EMIS: Clearing house data?

Table 1.111
2_5A15d_L * 2_5A15d * ID Crosstabulation

Count					
ID			2_5A15d		Total
			0	1	
1	2_5A15d_L	3	1		1
	Total		1		1
2	2_5A15d_L	1		1	1
	Total			1	1
3	2_5A15d_L	1	2	0	2
		2	4	0	4
		3	4	3	7
	Total		10	3	13
Total	2_5A15d_L	1	2	1	3
		2	4	0	4
		3	5	3	8
	Total		11	4	15

General Trends
The collection and integration of clearing house data within the EMIS show minimal implementation across levels. Only 4 affirmative responses (Yes) were recorded, distributed unevenly across the three levels of operation. A significant proportion of responses indicate that clearing house data is not yet integrated, highlighting gaps in its inclusion within the broader EMIS framework.

Item-by-Item Analysis
At the school level (Level 1), there were 2 responses indicating the absence of clearing house data integration and 1 affirmative response, suggesting limited implementation. The Dzongkhag level (Level 2) reported 4 negative responses and no affirmative responses, emphasizing the absence of integration efforts at this regional level. At the ministry level (Level 3), 3 affirmative responses were recorded out of 8 total responses, showing that some progress has been made at the national level in integrating clearing house data into the EMIS.

Key Contradictions
A key contradiction is observed in the lack of consistent implementation across the levels of operation. While the ministry shows some affirmative responses, indicating progress at the central

level, the school and Dzongkhag levels largely indicate the absence of clearing house data integration, creating a significant operational gap between levels.

Recommendations

Efforts should be made to establish a unified approach for integrating clearing house data into the EMIS across all levels. This includes training and capacity-building initiatives at the Dzongkhag and school levels to ensure uniform data integration processes. The ministry should lead this initiative by providing technical and logistical support and ensuring data compatibility and synchronization across levels. Additionally, pilot programs could be initiated at selected Dzongkhags and schools to demonstrate the value of clearing house data integration and to refine processes before scaling up nationwide.

Table 1.112

SWOT Analysis for Serviceability

Strength	Weakness
Ministry Leadership and Centralized Practices The Ministry (Level 3) has established strong foundational systems for data integration, validation, error minimization, and tracking, ensuring data accuracy and consistency. It also demonstrates commitment to data integrity, with frameworks in place for workforce data, apprenticeship data, and teacher-student linkages. This centralized leadership provides a strong model for lower levels to follow. **School-Level Awareness** At the school (Level 1), there is some awareness and adoption of systems for roster verification, workforce data, and teacher-student linkages, signaling potential for broader implementation. **Commitment to Data Integrity** Both the Ministry and Dzongkhag levels show efforts to maintain data consistency and integrity, including historical data reconciliation, and some capacity for workforce and apprenticeship data integration.	**Inconsistent Practices Across Levels** While the Ministry demonstrates solid practices, there are significant gaps at the Dzongkhag (Level 2) and School (Level 1) levels in areas like data integration, error management, system compatibility, and the use of identifiers. This inconsistency leads to fragmented and unreliable data management, undermining the overall effectiveness of the EMIS. **Limited Capacity and Adoption** Lower levels, particularly Dzongkhag and School, struggle with limited technical infrastructure, inadequate training, and lack of standardized systems. This prevents the EMIS from operating cohesively, resulting in inefficiencies and data gaps, especially in the areas of longitudinal tracking, workforce, and apprenticeship data. **Data Gaps** The absence of integration for essential data types such as labor records, apprenticeship data, and workforce data at the grassroots level hinders the ability of the EMIS to provide a comprehensive overview necessary for effective policy planning.
Opportunities	**Threats**
Standardization and Expansion The Ministry can lead efforts to standardize data practices, tools, and processes across all levels, including training programs for Dzongkhags and Schools. Expanding and scaling up the successful practices at the Ministry level, particularly for data validation and teacher-student linkages, could improve data consistency and reliability. **Enhanced Technology and Automation** Implementing automated data systems, digital platforms, and centralized monitoring tools can streamline data collection, error management, and	**Fragmentation and Inaccurate Data** The lack of standardized data practices across levels risks creating fragmented data systems, which can result in inaccuracies that compromise the utility of the EMIS for educational and workforce planning. **Resistance to Change and Resource Constraints** Resistance at lower levels to adopting new data collection protocols, as well as technical and resource limitations, could slow down the implementation of new systems. This may lead to uneven adoption and ineffective integration across the system.

integration, improving overall data quality at all levels. This would also reduce reliance on manual processes, helping to minimize errors. **Collaboration and Pilot Projects** Collaborating with external stakeholders, including workforce agencies and apprenticeship providers, can enhance the EMIS with valuable data on labor market trends and workforce readiness. Pilot projects in select regions can provide insights into how best to integrate new data types and systems before broader rollout.	**Privacy and Data Sharing Concerns** The integration of non-education data, such as apprenticeship or workforce data, may face challenges related to privacy, interdepartmental coordination, and data-sharing agreements, potentially delaying progress and creating barriers to system integration. **Compromised Long-Term Tracking** The fragmented implementation of key identifiers, course codes, and data validation systems at lower levels risks undermining the EMIS's ability to track students and teachers over time. This would reduce the ability of the system to support longitudinal analysis and evidence-based decision-making.

1.7.2 Integration of Non-Education Databases into EMIS

Standard: Data from sources collected by agencies outside of the EMIS are integrated into the EMIS data warehouse.

Benchmark ⇒ Latent | Emerging | Established | Advance

√

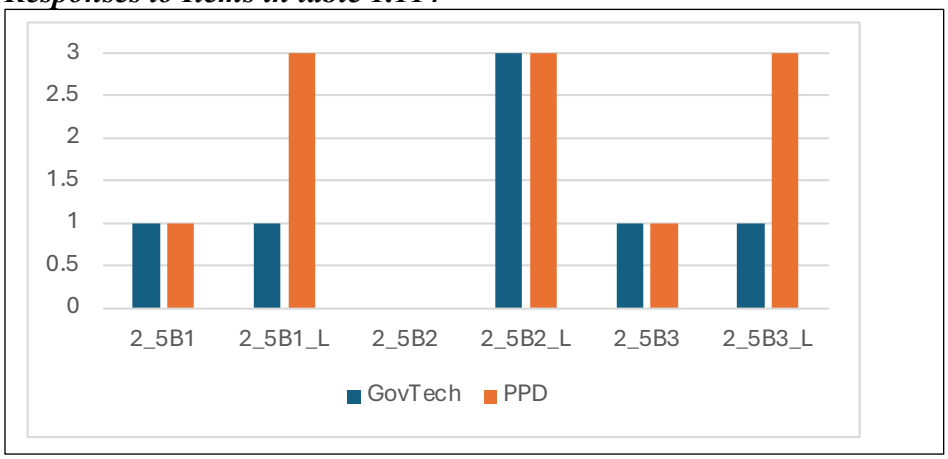
At the Emerging level, some data from external sources are integrated into the EMIS data warehouse, but the process is inconsistent and lacks comprehensive institutionalization. Manual data collection processes still exist, and their integration into the system is limited or ineffective. Engagement in data integration is predominantly centralized at Level 3 (Ministry), with minimal involvement at Dzongkhag (L=2) or School (L=1) levels. Mechanisms for integration are underdeveloped and may rely on manual or semi-automated processes, resulting in inefficiencies.

The current status of the EMIS is rated as Emerging for the integration of non-education databases. While both GovTech and PPD affirm the integration of external data sources (2_5B1) and the effective incorporation of manual operations when they exist (2_5B3), manual data collection processes are still present (2_5B2), and the integration mechanisms are centralized at Level 3 (Ministry). Minimal involvement at Levels 1 (School) and 2 (Dzongkhag) indicates limited decentralization and capacity-building in integration processes. To progress to the Established level, the EMIS must institutionalize integration mechanisms, reduce reliance on manual operations, and enhance engagement across all operational levels.

Table 1.113
Items for Integration of Non-Education Databases into EMIS

Item	Statement
2_5B1	Are data from sources that are collected by other agencies outside of the EMIS (e.g. administrative data, census data, and sociodemographic data) integrated into the EMIS data warehouse?
2_5B2	Do manual operations (e.g., data collected via non-technological means) still exist?
2_5B3	If yes, are they integrated effectively into the system as well?

Figure 1.7
Responses to Items in table 1.114



General Trends
The data indicates that external data sources are partially integrated into the EMIS data warehouse, with both GovTech and PPD affirming this capability (2_5B1). However, manual data collection processes persist (2_5B2), and while these operations are reportedly integrated (2_5B3), the level of integration varies by agency. Operational levels are predominantly centralized at Level 3 (Ministry), with PPD indicating integration at Levels 1 (School) and 3, while GovTech focuses on Level 1.

Item-by-Item Analysis
2_5B1: Both agencies confirm that data from external sources are integrated into the EMIS data warehouse, with PPD associating the activity with Level 3 and GovTech identifying Level 1 as the operational level.
2_5B2: Both agencies report the persistence of manual data collection processes but associate operational engagement with Level 3, suggesting centralized management of these operations.
2_5B3: Both agencies affirm that manual operations are effectively integrated into the system when they exist, with PPD associating this integration with Level 3 and GovTech reporting Level 1.

Key Contradictions
A key contradiction arises in operational levels for data integration (2_5B1, 2_5B3), where PPD consistently associates integration activities with Level 3, while GovTech focuses on Level 1. This misalignment suggests potential differences in the perception or execution of integration processes between the agencies.

Recommendations
To enhance the integration of non-education databases into the EMIS, both agencies should prioritize the institutionalization of automated integration mechanisms, reducing reliance on manual processes. Decentralizing integration responsibilities to include Levels 1 (School) and 2 (Dzongkhag) can enhance local engagement and capacity-building. Joint evaluations and

standardized procedures for integrating external and manual data sources should be implemented to address discrepancies and improve system-wide consistency.

Table 1.114
SWOT Analysis for Integration of Non-Education Databases into EMIS

Strength	**Weakness**
The EMIS integrates external data sources, with mechanisms in place to incorporate manual operations when necessary.	Manual data collection processes persist, and integration mechanisms are predominantly centralized, limiting engagement at lower operational levels.
Opportunities	**Threats**
Institutionalizing automated integration processes and decentralizing responsibilities can improve efficiency and local engagement.	Misalignment between agencies and the continued reliance on manual processes may hinder the scalability and efficiency of integration efforts.

1.7.3 Archiving Data

Standard: Multiple years of data are archived, including source data, metadata, and statistical results.

Benchmark ⇒ Latent | Emerging | Established | Advance

√

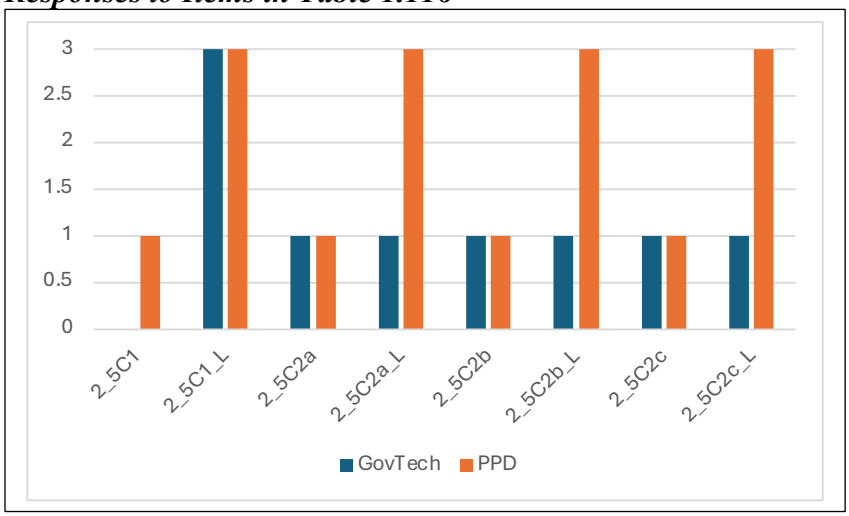
At the Emerging level, the EMIS demonstrates basic archiving capabilities, with some data (e.g., source data, metadata) preserved systematically. However, archiving mechanisms are not institutionalized, and operational levels are predominantly centralized at Level 3 (Ministry). Engagement at Dzongkhag (Level 2) and School (Level 1) levels is limited, and server infrastructure lacks redundancy or backup systems.

The archiving practices of the EMIS are rated as Emerging, reflecting foundational capabilities for preserving multiple years of data but significant gaps in decentralization and infrastructure. To progress to the Established level, the EMIS must institutionalize archiving mechanisms, expand server infrastructure with redundancy, and enhance engagement at all levels (L=1, L=2, L=3). Regular evaluations and harmonization of practices between agencies will ensure consistent and reliable data preservation.

Table 1.115
Items for Archiving Data

Item	Statement
2_5C1	Are databases archived on computer servers, beyond those at the Ministry of Finance?
2_5C2a	Are multiple years of data archived including source data?
2_5C2b	Are multiple years of data archived including metadata?
2_5C2c	Are multiple years of data archived including statistics?

Figure 1.8
Responses to Items in Table 1.116



General Trends

The data reveals that both GovTech and PPD acknowledge the archiving of multiple years of data, including source data (2_5C2a), metadata (2_5C2b), and statistical results (2_5C2c). However, PPD is the only agency to report the use of dedicated servers outside the Ministry of Finance (2_5C1), indicating a gap in infrastructure utilization across agencies. Operational levels are predominantly centralized at Level 3 (Ministry), with PPD extending engagement to Level 2 (Dzongkhag) for some items. GovTech, on the other hand, reports activity at Level 1 (School) for most archiving tasks.

Item-by-Item Analysis

2_5C1: PPD affirms the use of servers outside the Ministry of Finance, associating this activity with Level 3, while GovTech denies this capability, indicating a potential infrastructure gap or misalignment in system capabilities.

2_5C2a: Both agencies confirm the archiving of multiple years of source data. PPD associates this with Level 3, while GovTech reports this activity at Level 1.

2_5C2b: Both agencies affirm the archiving of metadata. PPD reports Level 3 as the operational level, whereas GovTech associates this with Level 1.

2_5C2c: Both agencies confirm the archiving of statistical results, with PPD identifying Level 3 and GovTech identifying Level 1.

Key Contradictions

The most notable contradiction is in the reported use of servers (2_5C1), where PPD affirms the use of external servers at Level 3, while GovTech denies this capability entirely. Additionally, operational levels for archiving tasks differ between the agencies, with PPD emphasizing centralized Level 3 activities and GovTech focusing on decentralized Level 1 engagement. These discrepancies highlight inconsistencies in perceptions or practices across agencies.

Recommendations

To address these gaps and contradictions, both agencies should prioritize the standardization of archiving practices, ensuring that multiple years of data, including source data, metadata, and statistical results, are uniformly preserved across all operational levels. Infrastructure development, such as the expansion of dedicated server use beyond the Ministry of Finance, is critical to enhance data security and accessibility. Decentralizing archiving responsibilities to include Dzongkhag (Level 2) and School (Level 1) levels can improve engagement and ensure comprehensive data coverage. Regular joint evaluations of archiving infrastructure and practices can help harmonize processes and address misalignments between agencies.

Table 1.116
SWOT Analysis for Archiving Data

Strength	**Weakness**
Multiple years of source data, metadata, and statistical results are archived, demonstrating foundational archiving capabilities.	Limited use of dedicated servers, minimal decentralization, and inconsistent engagement at Levels 1 and 2 hinder comprehensive and reliable archiving practices.
Opportunities	**Threats**
Expanding server infrastructure and decentralizing archiving processes can enhance data preservation and accessibility across all levels.	Misalignment between agencies and reliance on centralized practices could lead to inefficiencies and data accessibility challenges.

1.7.4 Services to EMIS Clients

Standard: Services provided by the system to EMIS clients include ensuring its statistics' relevance, consistency, usefulness, and timeliness.

Benchmark ⇒ Latent | Emerging | Established | Advance

√

At the Emerging level, the EMIS provides basic services to clients, ensuring some level of relevance and consistency but with gaps in usefulness and timeliness. Service delivery is primarily centralized at Level 3 (Ministry), with limited engagement or accountability at Dzongkhag (Level 2) and School (Level 1) levels. Mechanisms for ensuring service quality are underdeveloped and inconsistently applied.

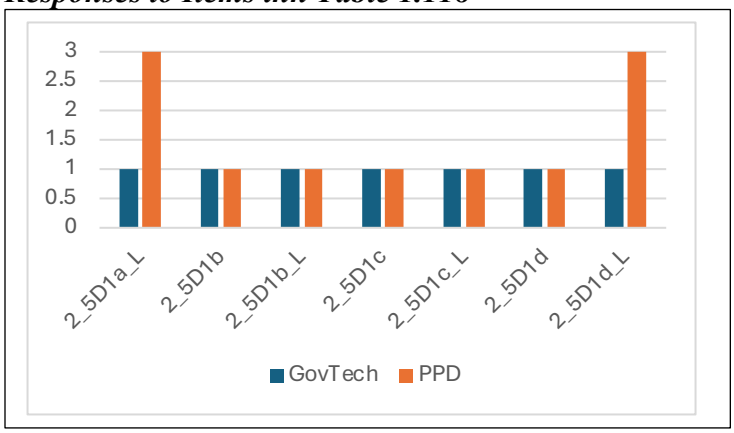
The services provided by the EMIS are rated as Emerging, reflecting foundational capabilities in ensuring relevance, consistency, usefulness, and timeliness but with significant gaps in decentralization and standardization. To progress to the Established level, the EMIS must institutionalize service mechanisms, decentralize operations to include Dzongkhag (Level 2) engagement, and align service delivery processes across all levels. Regular evaluations and capacity-building efforts are critical to enhancing the quality and responsiveness of services provided to clients.

Table 1.117
Items for Services to EMIS Clients

Item	Statement
2_5D1a	Do services provided by the system to EMIS clients ensure relevance?
2_5D1b	Do services provided by the system to EMIS clients ensure consistency?
2_5D1c	Do services provided by the system to EMIS clients ensure usefulness?

2_5D1d	Do services provided by the system to EMIS clients ensure timeliness?

Figure 1.9
Responses to Items inn Table 1.118



General Trends
The data reveals that both GovTech and PPD affirm the EMIS system ensures the relevance (2_5D1a), consistency (2_5D1b), usefulness (2_5D1c), and timeliness (2_5D1d) of its statistics. However, operational levels are not consistently reported, with GovTech associating these services predominantly with Level 1 (School) and PPD identifying Level 3 (Ministry) for most items. This reflects a centralized focus by PPD and a more localized perspective by GovTech, indicating possible variations in how services are provided or perceived across levels.

Item-by-Item Analysis
2_5D1a (Relevance): Both agencies affirm the relevance of services, but GovTech associates this with Level 1, while PPD emphasizes Level 3, suggesting a disparity in operational focus.
2_5D1b (Consistency): Both agencies confirm consistency, with both reporting Level 1 as the operational level. This reflects alignment in providing consistent data services at the school level.
2_5D1c (Usefulness): Both agencies agree on the usefulness of services and associate this with Level 1, indicating a localized delivery of services meeting client needs.
2_5D1d (Timeliness): Both agencies affirm timeliness, but operational levels differ, with GovTech focusing on Level 1 and PPD emphasizing Level 3. This discrepancy may reflect differences in reporting or actual service delivery.

Key Contradictions
A key contradiction arises in the operational levels for relevance (2_5D1a) and timeliness (2_5D1d), where GovTech associates these services with Level 1, and PPD associates them with Level 3. This disparity may reflect differences in service provision or perceptions between centralized and localized operations. Additionally, the absence of Level 2 engagement highlights a structural gap in service delivery.

Recommendations

To enhance service provision, both agencies should focus on standardizing processes to ensure consistent relevance, consistency, usefulness, and timeliness of statistics across all operational levels. Decentralizing service delivery to include Dzongkhag (Level 2) engagement can address gaps and improve regional coordination. Joint evaluations of service mechanisms should identify discrepancies and align practices between centralized (Level 3) and localized (Level 1) operations. Capacity-building initiatives can strengthen the quality and responsiveness of services, ensuring they meet client needs effectively.

Table 1.118
SWOT Analysis for Services to EMIS Clients

Strength	**Weakness**
Both agencies affirm the relevance, consistency, usefulness, and timeliness of services, demonstrating foundational capabilities.	Disparities in operational levels and minimal engagement at Dzongkhag (Level 2) limit comprehensive service delivery.
Opportunities	**Threats**
Standardizing service processes and decentralizing operations can enhance service quality and client satisfaction across all levels.	Misalignment between centralized and localized services may result in inconsistencies, reducing client confidence and satisfaction.

1.8 Overall Benchmark

The overall benchmark for Policy Area 2: System Soundness is classified as *Emerging*, determined by averaging the benchmarks of its major factors. According to the scale, a system at the *Emerging* level has basic processes and a structure that do not fully support the components of an integrated system. This classification indicates that while foundational elements such as data architecture, data coverage, data analytics, dynamic system functionality, and serviceability are present, they remain in a basic state and are not yet sufficiently developed to ensure comprehensive integration and effectiveness. The system has not progressed to the *Established* level, where processes and structures partially support integration, or the *Advanced* level, where these elements are sound and fully support the components of an integrated system. To move beyond the *Emerging* level, it is recommended to review and enhance the identified foundational elements, ensuring they are robust, interconnected, and aligned with the objectives of a fully integrated system. This would strengthen the overall system soundness and enable greater functionality and serviceability.

1.9 Conclusion

System soundness is a cornerstone of an effective Education Management Information System (EMIS), encompassing the processes and structures that ensure an integrated and functional system. This chapter analyzed five critical factors that collectively define system soundness: Data Architecture, Data Coverage, Data Analytics, Dynamic System, and Serviceability. Each factor was assessed through a detailed review of general trends, item-by-item evaluations, and the development of actionable recommendations aimed at enhancing the system's overall health and functionality.

To provide a clear and practical framework for evaluation, each factor was benchmarked using a four-level performance scale: Latent, Emerging, Established, and Advanced. The "Advanced" level represents the optimal state, where system processes and structures are fully aligned with the goals of integration, efficiency, and adaptability. These benchmarks offer stakeholders a structured approach to assess current practices and identify priority areas for improvement.

The analysis underscores the importance of robust data architecture and comprehensive data coverage to support informed decision-making. Effective data analytics and a dynamic system capable of adapting to evolving needs are critical for maintaining relevance and responsiveness. Additionally, serviceability—the system's ability to meet user needs efficiently and reliably—plays a vital role in ensuring sustained functionality.

Moving forward, stakeholders are encouraged to utilize the benchmarks and insights presented in this chapter to prioritize strategic actions. By addressing identified gaps and strengthening system components, the EMIS can achieve greater integration, adaptability, and user-centered service delivery. Ultimately, a sound EMIS will empower stakeholders to make data-driven decisions, support equitable and efficient outcomes, and adapt to the ever-changing demands of the education sector.

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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 launching 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

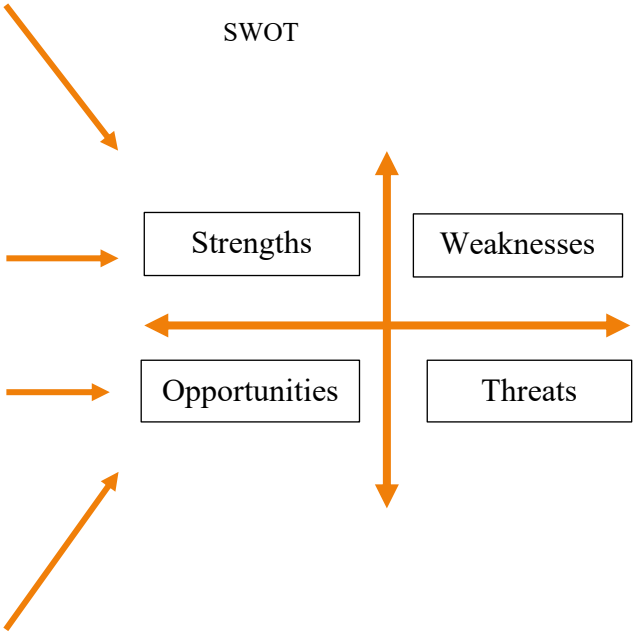
This study adopted the SABER-EMIS approach to assess the EMIS within Bhutan's school education system. As articulated by Abdul-Hamid et al. (2014), the SABER-EMIS framework provides a comprehensive assessment of education information systems across four key policy areas: (1) Enabling Environment (Assessment 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*

Policy Area	Set of Indicators
Enabling Environment	20. Legal framework 21. Organizational structure and institutionalized processes 22. Human resources 23. Infrastructural capacity 24. Budget 25. Data-driven culture
System soundness	26. Data architecture 27. Data coverage 28. Data analytics 29. Dynamic system 30. Serviceability
Quality data	31. Methodological soundness 32. Accuracy and reliability 33. Integrity 34. Periodicity and timeliness
Utilization for decision-making	35. Openness to EMIS users 36. Operational use 37. Accessibility 38. Effectiveness in disseminating findings/results



*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.

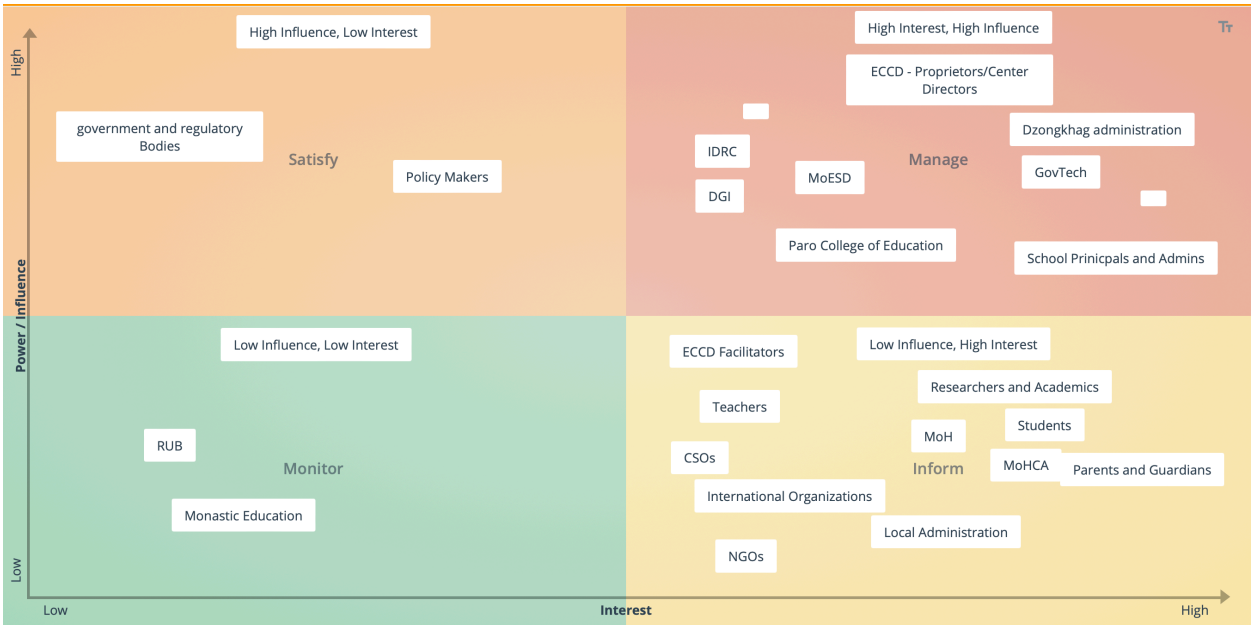
For indicators with multiple sub-indicators, benchmark levels were quantified on a numerical scale: Latent = 1, Emerging = 2, Established = 3, and Advanced = 4. The benchmark level for each main factor was calculated as the average of its sub-factor levels. Similarly, the benchmark for each of the four 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:

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

Where:

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

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

$$n = 229\ schools\ appox$$

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	Leagal Framework	Institutionalization (4) Responsibility (2) Dynamic framework (2) Data Suppply (7) Comprehensive and quality care (7) Data sharing and cordination (2) Utilization (1) Budget (2) Confidentiality (15)
	Organizational Structure and Instutional Processes	(6)
	Human Resources	Personnel (3) Professional development (11)
	Infracture Capacity	Data collection means (3) Database (2) Data mangement 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	Scource 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)
	Openess	EMIS stakeholders (1)

Utilization in Decision Making		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.

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