

CASE STUDY

Working Towards Education Success Using Data

A review of Ghana's journey towards improved learning outcomes using data

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Reviewer

Molly Jamieson Eberhardt

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Abbreviations and acronyms

AU	African Union
COM-B	Capability, Opportunity, Motivation-Behaviour
DPC	Data Protection Commission
ECOWAS	Economic Community of West African States
EGMA	Early Grade Maths Assessment
EGRA	Early Grade Reading Assessment
EMIS	Education Management Information System
ESP	Education Strategic Plan 2018–2030
HCI	Human Capital Index
MoE	Ministry of Education
NEA	National Education Assessment
PMDV	Performance Management and Data Visualisation
NaSIA	National Schools Inspectorate Authority
SDG	Sustainable Development Goal
STEM	Science, technology, Engineering and Mathematics
TIMMS	Trends in International Mathematics and Science Study
TVET	Technical and Vocational Education and Training
UIS	UNESCO Institute for Statistics

1. Introduction

The sub-Saharan Africa region is trapped in a learning crisis with devastating implications for children. In 2019, 86% of sub-Saharan children could not read or understand a basic text at age ten ([↑World Bank, 2022](#)). The Covid-19 pandemic further exacerbated the situation, with children losing an estimated equivalent of an additional year's learning ([↑Alejo et al., 2024](#); [↑Dela Cruz et al., 2024](#)). The pandemic-induced learning gap is a further challenge that sub-Saharan African children, and the region more generally, can ill afford. Not addressing the regional learning crisis will have a detrimental impact on economic development and well-being and risks restricting future national and regional economic growth and productivity and fuelling social unrest ([↑Gustafsson-Wright & Osborn, 2022](#); [↑World Bank, 2022](#)).

1.1. Informed decision-making: The investment required and its challenges

National education data systems can provide ministry of education (MoE) officials with the knowledge they need to make decisions about policy and practice that will ultimately improve education outcomes ([↑Abdul-Hamid, 2017](#); [↑UIS, 2017](#)) — but only if those data systems generate accurate, timely, accessible, and relevant data ([↑Abdul-Hamid, 2017](#); [↑UIS, 2017](#)). Education research has shown that when used judiciously, good quality education system data can support improved learning outcomes and education systems in numerous ways. Data can strengthen teaching practice, reduce cost inefficiencies, identify pathways to more equitable resource allocations, and relieve financial and human resource planning challenges at school, regional, and national system levels ([↑Abdul-Hamid, 2017](#); [↑Gustafsson-Wright & Osborn, 2022](#); [↑UIS, 2017](#)). Given the potential gains, it is unsurprising that low- and middle-income countries, including Ghana, have made improving national education data systems a key ministerial priority. However, recognising the compelling investment case for national education data systems is only the beginning.

Despite the prioritisation of effective data use in national and global education policy agendas, progress towards using data to make evidence-based decisions remains slow ([↑Custer et al., 2018](#); [↑Davies & Fumega, 2022](#)). To realise the value of their data assets, MoEs must navigate a complex web of multiple stakeholder information needs, political agendas, technical and managerial capacity demands, technology challenges, and barriers to collaboration across government departments

and ministries ([Abdul-Hamid, 2017](#)). Only when MoEs address these challenges will the pre-conditions for ensuring effective national data education systems be met; only then will school, district, and national level stakeholders have access to the right data at the right time to inform their evidence-based decision-making.

This case study is the first in a series documenting the journey of Ghana's MoE towards the effective use of data to guide its decision-making for policy and practice.

2. Case study scope and methodology

Ghana's MoE is committed to using evidence-based policy and practice to improve national learning outcomes, reduce education inequalities, and strengthen education sector accountability and monitoring mechanisms. This commitment is central to the MoE's *Education Strategic Plan 2018–2030* (ESP) ([↑MoE, Ghana, 2018](#)) and is a key component of the MoE's cooperation frameworks with its development partners ([↑UNESCO, 2022](#); [↑World Bank, 2019](#)).

This case study is the first in a series which seeks to capture how the MoE is strengthening its data governance and data management systems as part of its ESP agenda. The case study provides insight into the MoE's ambitious multi-year programme to facilitate evidence-informed decision-making capacity throughout the Ghanaian national education system, including at school, district, and national levels. This case study is not an evaluation of the MoE's progress nor an exhaustive description of all activities undertaken by the MoE. Instead, it highlights the types of considerations and challenges the MoE faces as it journeys towards a data-driven culture. The MoE aims to make its rich data available to decision-makers and officers at school, district, and national levels, who will use it to inform decision-making, which will ultimately lead to improved learning outcomes, greater education equality, and increased education system accountability.

The case study focuses on the work led by the MoE's Reform Delivery Unit, in collaboration with MoE agencies, departments, and external partners, to strengthen the national education system's data governance and management. EdTech Hub has authored the case study, building on its experience as a member of the System Support Team within the MoE and the direct technical assistance the Hub has provided to the Reform Delivery Unit team.¹

¹ The System Support Team consists of system and data officers of the various MoE agencies with institutional knowledge of the data management systems of the respective agencies. The members of the System Support Team started with initial technical support for the development process of the Performance Management and Data Visualisation system (PMDV), serving as the committee reviewing the acceptance criteria for the PMDV. The System Support Team's mandate extends to supporting the MoE in developing and implementing EdTech interventions to improve learning outcomes.

The case study draws extensively on the data governance situational analysis conducted in 2023 by EdTech Hub in collaboration with the Reform Delivery Unit ([↑Korboe et al., forthcoming](#)). The situational analysis was conducted during the first half of 2023, with respondents from thirteen MoE agencies and departments, including the MoE itself and:

- Ghana Education Service (GES)
- Centre for National Distance Learning and Open Schooling (CENDLOS)
- Commission for Technical and Vocational Educational Training (CTVET)
- Ghana Tertiary Education Commission (GTEC)
- Ghana Technical and Vocational Education and Training (TVET) Service
- Student Loan Trust Fund (SLTF)
- Complementary Education Agency (CEA)
- National Council for Curriculum and Assessment (NaCCA)
- National School Inspection Authority (NaSIA)
- Statistics Research and Information Management Directorate (SRIM).

The situational analysis provides essential insights into the institutions' staff perceptions of data governance aspects, specifically, data vision and strategy, data governance structure and key roles and responsibilities, data rules, controls and accountabilities, and implementation roadblocks. The situational analysis also collected data on MoE agencies and departments' data governance and related data management needs and priorities. Desk reviews on data governance and management, conducted as part of EdTech Hub's technical assistance to the MoE, further inform the case study. In order to locate the MoE's experiences and efforts within broader ambitions to address global learning gaps, this case study also draws on the international literature on national data education systems.

The case study utilises a set of data governance and data management functions adapted from the data governance framework used by the Australian Capital Territory Government ([↑ACT Government., 2020](#)) to

illustrate the MoE's ambitions, efforts, and challenges. This framework was selected as it built upon two important insights, namely:

1. Effective data cultures are facilitated by appropriate data governance and their supporting data management practices.
2. Creating paths to an effective data culture is a cultural and behavioural change process with complex time and resource demands ([↑ACT Government, 2020](#)).

The framework understands that robust data governance regimes require:

- Clearly articulated data vision and purpose;
- Appropriate policy, legislation, and risk mitigation frameworks;
- Agreed data principles;
- Clear roles and responsibilities;
- An endorsed data governance and management strategy.

The framework further understands that robust data governance regimes are made possible by strong data management practices that:

- Ensure data is discoverable;
- Facilitate data understanding;
- Establish ethical and effective data sharing;
- Improve and maintain data quality;
- Safeguard and secure data on behalf of individual users and system stakeholders ([↑ACT Government, 2020](#)).

The data governance framework is discussed in more detail in [Section 3.4](#).

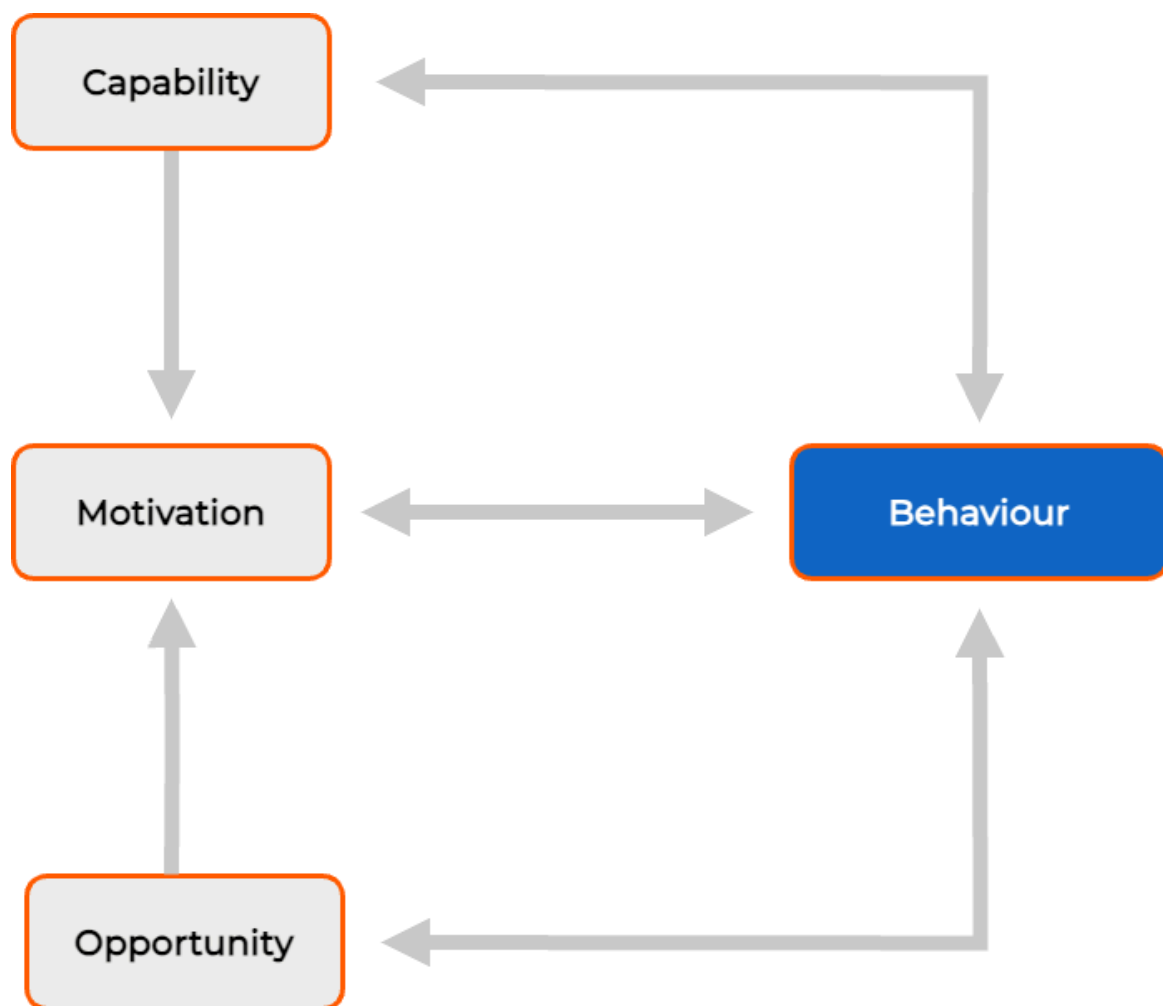
This case study, informed by an appreciation that effective data culture creation is predicated on behavioural change, discusses the MoE's endeavours and experiences to date through the lens of [↑Michie et al.'s \(2011\)](#) 'COM-B' system behaviour change framework. The COM-B system behaviour change framework understands that behaviour change processes, whether at individual, organisational, or system level, are contingent upon the presence of an interaction between three components:

1. **Capability** includes the psychological, skills, knowledge, and physical capacity to engage in an activity.

2. **Opportunities** are factors that lie outside the individual, organisation, or system's direct control and allow or elicit behaviour (↑[Michie et al., 2011](#), p. 4).
3. **Motivation** includes both conscious and unconscious processes that direct behaviour. These processes include analytical reasoning, emotional responses, political considerations, and habitual responses.

See [Figure 1](#) below for an illustration highlighting the interaction between the three components in behaviour change processes.

Figure 1. *The COM-B system—a framework for understanding behaviour. Source: Adapted from ↑[Michie et al., 2011](#).*



2.1. Case study exclusions

This case study does not include discussions of the procurement and external supplier management challenges, which are often part and parcel of establishing and maintaining national education data systems.

The case study does not include a detailed exploration of how assessment data is currently integrated into the national education data system.

2.3. Structure of the case study

[Section 1](#) provides an introduction to data-informed decision-making. [Section 2](#) includes a description of the study's scope and methodology, and also notes key exclusions from the case study. [Section 3](#) outlines the investment case for evidence-based decision-making and some challenges to its achievement.

[Section 4](#) includes an overview of Ghana's education system, the *Education Strategic Plan 2018–2030*, and key development-partner-supported projects. [Section 5](#) includes a discussion of Ghana's national education system and its challenges, and highlights some key findings from the 2023 data governance stakeholder analysis. [Section 6](#) concludes the report with a summary of the case study approach and indicates the focus of future case studies in this series.

3. Evidence-based decision-making in national education data systems

This section introduces national education data systems, and provides a rationale for investments, an exploration of operational challenges, and also introduces a data governance and data management framework.

3.1. An introduction to national education data systems

Building robust national education data systems can be a strong driver in addressing system challenges. National education data can target national challenges by providing timely evidence, facilitating alignment on (or understanding of) gaps and potential solutions among disparate stakeholders, and improving a nation's ability to provide important public services, including education ([↑ACT Government, 2020](#); [↑Davies & Fumega, 2022](#)). Conversely, data can also be misused and, when managed inappropriately, harm citizens and impinge on their rights ([↑Davies & Fumega, 2022](#)).

An effective national education data system is fit for purpose—able to capture the right data at the right time for the right stakeholders to aid decision-making. National education data systems collate, analyse, store, share, and eventually dispose of data from diverse sources across national education systems. See [Figure 2](#) below, which illustrates the data life cycle within national education systems. National education data systems are complex. [Figure 3](#) below, created by the [↑UNESCO Institute for Statistics \(UIS, 2023\)](#), lists the main education data sources: administrative data, financial and expenditure data, household surveys, population censuses, and learning assessments.

[Figure 3](#) clearly illustrates that MoEs rely on other government ministries and departments to meet their data requirements, and that their internal data is sourced from multiple MoE departments and agencies.

Figure 2. *The 8 Stages of the data lifecycle.* Source: Adapted from [Deshpande, 2023](#), with permission from Sciliffe.inc.

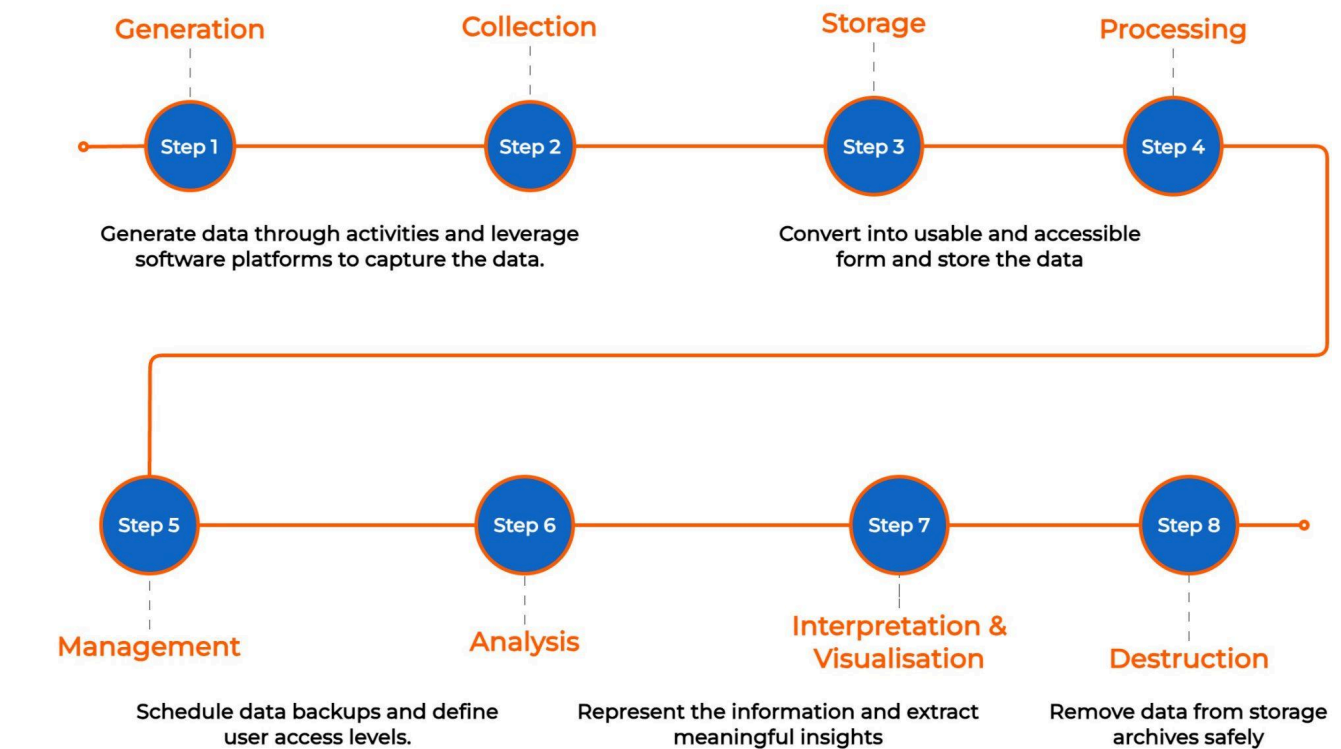


Figure 3. Comprehensive view of education data sources. Source: [UIS, 2023](#).

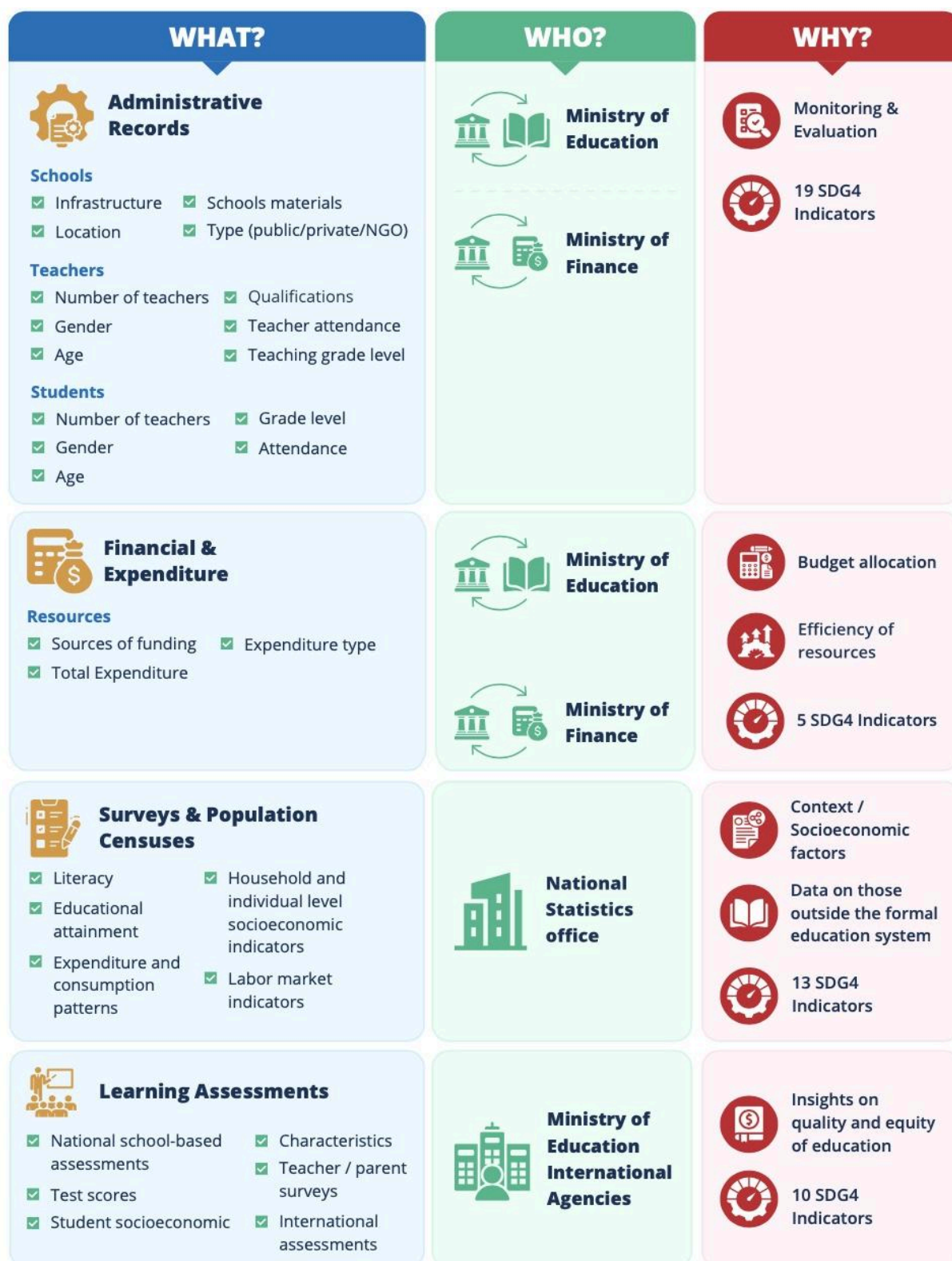


Figure 3 illustrates the multiple institutional stakeholders managing education data. This highlights the importance of having a set of agreed definitions for common identifiers, which are used and adhered to across

all ministries, agencies, and departments ([↑UIS, 2023](#)). Examples of important common identifiers are student identification numbers and school identification numbers.

MoEs in low- and middle-income countries frequently struggle to define and adhere to common identifiers ([↑UIS, 2023](#)). For example, a school may be defined by the presence of a principal by one MoE agency and by a distinct geographical address by another. Where a primary and secondary school, each having its own principal, are located at the same address, the first agency would count two schools, whereas the second agency would count only one. An absence of common identifiers is a critical blocker to data-based decision-making ([↑UIS, 2023](#)).

Where common identifiers are in place, great strides can be made in evidence-informed decisions relating to policy and practice. For example, if common identifier definitions are used, then administrative data on teacher deployments, training, and class sizes can be compared with student learning assessment data. This can help policymakers understand how class size and teacher characteristics can impact learning outcomes. This analysis can then be used to propose evidence-based policy interventions to fuel a MoE's agenda for improving learning outcomes ([↑UIS, 2023](#)).

3.2. The case for investing in evidence-based decision-making capacity

“... setting clear priorities and high standards, collecting reliable performance data to track system and student progress, and using data to drive accountability are consistent features of the world's most improved education systems.”

– ↑International Commission on Financing Global Education Opportunity (2016), p. 52

There is a growing body of evidence that links investment in nationally owned data systems and data-informed decision-making with positive outcomes in learning outcomes, cost efficiency, and equity. In its analysis of Sustainable Development Goal 4 (SDG4 = Quality Education) country data generated for the Education 2030 Agenda, [↑UIS \(2017\)](#) found that evidence-based planning and decision-making produce financial,

efficiency, and equity benefits and support national education target achievement.

3.2.1. Learning outcomes

Global research studies (see [↑Abdul-Hamid, 2017](#); [↑UIS, 2017](#)) consistently point to the link between improved learning outcomes and careful investment in data collection and evidence generation at all levels of national education systems. For example, [↑Abdul-Hamid \(2017\)](#) highlights the use of formative assessments combined with classroom monitoring and performance feedback loops, which have allowed school leadership to influence student learning outcomes in schools.

3.2.2. Equity

Data on poverty and exclusion combined with transparent education financing allocation figures allow MoEs to make budget decisions which could significantly improve national performance against equitable education targets. [↑Alejo et al. \(2024\)](#) highlight a study across 102 schools that found that increasing public education resource allocation to the poorest 20% of children by just one per cent could result in a 2.6% to 4.7% reduction in learning poverty rates. This could conceivably lift an additional 35 million children out of learning poverty globally ([↑Alejo et al., 2024](#)).

3.2.3. Cost-efficiency and resource allocation

[↑UIS \(2017\)](#) analysis of data collected under the Education 2030 Agenda SDG 4 concluded that the cost of improving data, assuming the information generated is utilised for decision-making, is markedly lower than the cost to a national education system of having bad or no information. The research found that bad data was particularly linked to increased costs, budgetary inefficiencies, and inequitable resource allocations ([↑UIS, 2017](#)).

3.2.4. National ownership of national education systems

Global education research also increasingly points to national ownership of national education systems as a key driver of evidence-based decision-making success ([↑Custer et al., 2018](#); [↑Raudonyte & Foimapafisi, 2022](#)). When linked to national priorities and national-level stakeholder data, investments needed in data and evidence generation are more likely to be consistently used and generate national education performance returns ([↑Raudonyte & Foimapafisi, 2022](#)). As outlined below, ensuring national ownership of data- and evidence-generation systems and processes is essential to the strategic ambitions of Ghana's MoE.

3.3. Evidence-based decision-making: The challenge for ministries of education

Particularly in low- and middle-income countries, MoEs are often far from able to leverage their data for effective decision-making ([↑Davies & Fumega, 2022](#)). Many countries in sub-Saharan Africa struggle to collect and store seemingly basic education data, let alone bring together data from multiple MoE agencies to understand how to analyse and address complex challenges related to national learning outcomes ([↑Abdul-Hamid; ↑Chelpi-Den Hamer, 2024](#); [↑UIS, 2017](#)). The investment case for national education data systems is compelling, but it is only the beginning. The discussion below uses the lens of capabilities, motivation, and opportunity to highlight several complex challenges facing ministries as they strengthen their evidence-based decision-making capabilities.

3.3.1. Capability

In their field research and accompanying review of two large surveys of education policymakers' and other education stakeholders' perceptions of low- and middle-income countries, [↑Custer et al. \(2018\)](#) point to capability gaps as the main blocker to national education system decision-making. Contrary to expectations, education professionals do not perceive a lack of data as the most important factor influencing performance; instead, it is a lack of government technical capacity to utilise the data it has ([↑Custer et al., 2018](#)). In the face of resource constraints and competing priorities, MoEs in low- and middle-income countries often struggle to make the requisite investments in internal technical capacity, including in:

- data management system development and maintenance;
- data analysis capabilities;
- teacher, school leader, and district official training in accessing, understanding, and using data available within the system ([↑Abdul-Hamid, 2017](#)).

For capability development efforts to succeed, however, they must be fit for purpose and tailored to specific user or stakeholder needs and learning styles ([↑Abdul-Hamid, 2017](#)).

3.3.2. Opportunity

National education system actors, particularly at school (teachers, school heads, and administrators) and district levels, consistently report a lack of data availability and accessibility challenges restricting their

decision-making capacity ([↑Abdul-Hamid, 2017](#)). Unfortunately, little user research has been undertaken to address this issue, particularly in understanding how and under what circumstances stakeholders in education systems in low- and middle-income countries can access, use, and value education data ([↑Custer et al., 2018](#)).

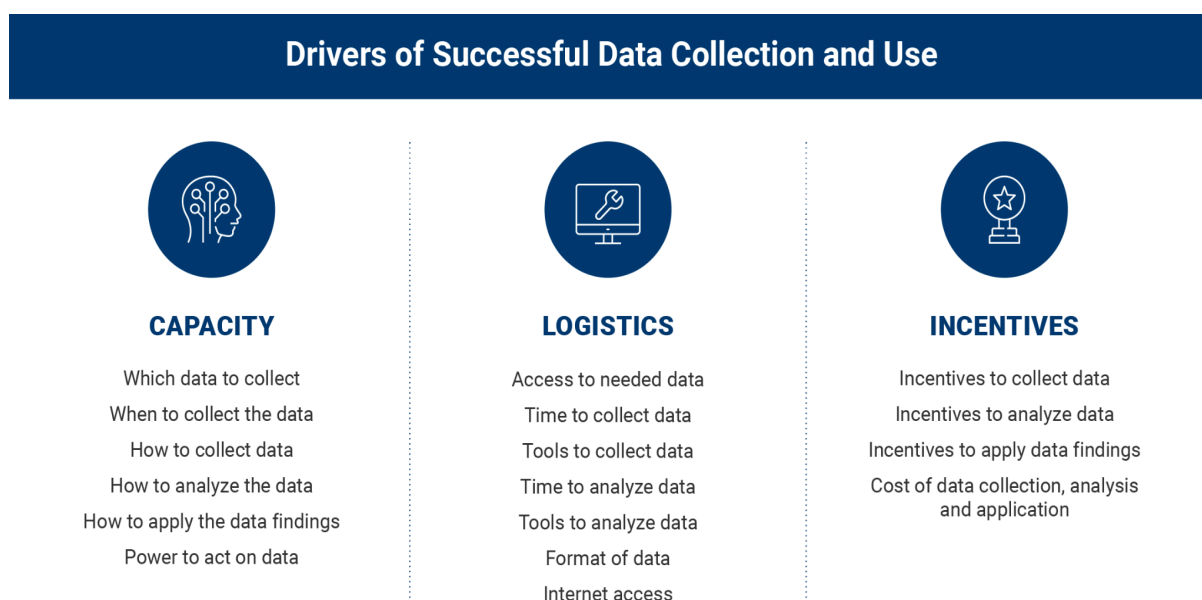
3.3.3. Motivation

Perhaps the greatest factor affecting stakeholders' motivation to use education system data is the trust deficit ([↑Custer et al., 2018](#)). If stakeholders feel they cannot trust that the data available is accurate, then they are unlikely to use it.

The three behavioural change components, capability, motivation, and opportunity do not operate in isolation; rather, they create complex sets of interactions that require careful management to address.

[↑Gustafsson-Wright & Osborn \(2022\)](#), in their study of how to improve utilisation of learning measurements, provide a useful illustration. [Figure 4](#) below lists the multiple drivers affecting the successful collection and use of learning assessment data. The drivers correspond largely with the three behavioural change factors used in this case study, with 'logistics' corresponding to opportunity, 'capacity' to capability, and 'incentives' to motivation.

Figure 4. Drivers of successful data collection and use. Source: [↑Gustafsson-Wright & Osborn, 2022](#), reproduced with permission.



Data's ultimate value does not lie in its production but in its use ([↑Custer et al., 2018](#)). Education data systems are unlikely to produce accurate, timely,

and useful data if the information generated by the system is not well integrated into ministry decision-making processes; the same applies if the data system design is not based on the information needs of stakeholders at school, regional, or national levels. Data quality improves in environments where there is demand for its use ([↑Custer et al., 2018](#)). Without consistent use, data systems enter a vicious cycle, providing inaccurate, incomplete and/or out-of-date data. This phenomenon can further erode the already low level of trust that decision-makers exhibit in data education systems in low- and middle-income countries.

Given the seemingly insurmountable obstacles which ministries in low- and middle-income countries must overcome to collect, manage, store and use data that matters, why then is using data so important? Put simply, the education ministries which have shown the most progress in improving the education system and learning outcomes are those that use evidence to inform their decision-making ([↑International Commission on Financing Global Education Opportunity, 2016](#)). This progress is achieved through paying adequate attention to data governance, a commitment to improving data quality, investment in internal data capacity, and persistent political will to manage the complexity of collaboration and capacity needed to succeed ([↑Abdul-Hamid, 2017](#); [↑UIS, 2017](#); [↑UIS, 2023](#)). [Sections 4 and 5](#) highlight how Ghana has succeeded in taking the first steps towards these aims.

3.4. Data governance and data management practice

Data governance determines the rules for how data is managed within an organisation or system, for example, a national education system. Data governance maintains data system oversight and ensures data quality and ethical data management practices through all stages of data life. ([↑ACT Government, 2020](#); [↑Korboe et al., forthcoming](#)). Data governance frameworks stipulate who holds authority over data assets and how data safety and security are ensured, particularly for individuals' personal data.

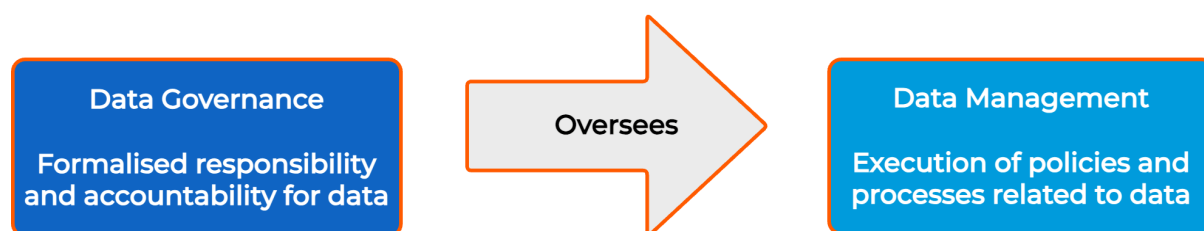
Implemented carefully, the policies, processes, and standards contained within a data governance framework will

“[...] create and enforce rules of engagement around decision rights and procedures, resolve frictions and ambiguities around data, foster compliance with applicable legal and regulatory regimes, and moderate costs and complexity of managing data assets”
([↑Korboe et al., forthcoming](#), p. 15)

There can be some confusion as to the relationship between data governance and data management processes, with the terms often used

interchangeably ([↑ACT Government, 2020](#)). The relationship, illustrated in [Figure 5](#) below, can be understood as hierarchical. Data governance has formal accountability for data use within a system, while data management executes an organisation or system's data strategy and processes ([↑ACT Government, 2020](#)). Despite this hierarchical relationship, achieving data governance ambitions is predicated on having the technical, technological, and financial resources able to maintain effective data management practices.

Figure 5. Relationship between data governance and data management.
Source: Adapted from [↑ACT Government, 2020](#).



The data governance framework outlined below takes into account that the overarching goal of data governance is to create a data-driven culture which is supported by ethical, safe, and effective data management practices ([↑ACT Government, 2020](#)). This framework will be used to illustrate examples in the case of Ghana in [Sections 4](#) and [5](#).

Under the framework, the functions of effective data governance systems necessary to support a strong data-driven culture are as follows.

1. A well-articulated data vision and purpose which is widely understood and endorsed within the system.
2. Policy, legislation, and risk mitigation frameworks, which include privacy and security provisions and provide a means for analysing and mitigating risks.
3. Agreed data principles, which are embedded in education ministry work practices.
4. Roles, and responsibilities, including how collaboration occurs among agencies, departments, and staff within and outside the education ministry.
5. A data governance and management strategy which provides the roadmap to establishing and maintaining a data-driven culture.

Data governance functions are supported by the fundamentals of good data management practice, namely:

1. Ensuring data is discoverable
2. Ensuring data is understood
3. Facilitating ethical and effective data sharing
4. Working towards and maintaining data quality
5. Maintaining data safety and security.

The common thread running through all effective data governance and management components is the importance of clear communication and effective collaboration among stakeholders. A clear communications strategy, combined with adequate data governance, management, use, and training opportunities, creates an environment where all stakeholders have the information and skills they need to actively contribute to creating an effective education data system.

Data governance is not static but a constantly evolving system that responds to changing stakeholder needs, advances in data management technology and knowledge, ministry resource fluctuations, changes in legislative environments, and the broader social, cultural, and political context.

4. Ghana's education system performance and ambition

This section outlines Ghana's education system performance, the *Education Strategic Plan 2018–2030*, and relevant development-partner projects.

4.1. Ghana's education system performance

Children in Ghana, like many children in sub-Saharan Africa, struggle to reach the MoE's learning targets ([↑UNESCO, 2024](#)). In the 2018 Ghana National Education Assessment (NEA) for children in Grades 4 and 6, only 19% obtained NEA proficiency targets. This represents a decrease in performance between 2016 and 2018 ([↑UNESCO, 2022](#)); see [Table 1](#).

Table 1. *National education assessment results for Grades P4 and P6* ([↑UNESCO, 2022](#))

	P4 English		P4 Maths		P6 English		P6 Maths	
	2016	2018	2016	2018	2016	2018	2016	2018
Below minimum competency (%)	29.3	44.0	45.2	48.0	28.4	47.0	29.0	35.0
Minimum competency (%)	33.5	32.0	32.8	33.0	33.7	28.0	45.9	44.0
Proficiency (%)	37.2	25.0	22.0	19.0	37.9	25.0	24.9	22.0

Poor performance in national learning outcomes has detrimental effects on national and individual citizens' social and economic development. Based on the Human Capital Index (HCI) 2020, a child born in Ghana is estimated to only reach 45% of their productivity potential as compared to them being born into a situation where the full preconditions for human capital development—knowledge, skills, and health—were available ([↑World Bank, 2023](#)). While higher than the average for sub-Saharan Africa (40%), Ghana's HCI is lower than that of other lower-middle-income countries (48%) ([↑World Bank, 2023](#)).

Ghana also experiences regional and gender inequalities in learning outcomes, particularly at secondary and tertiary levels ([↑Mikesell, 2018](#)). In the poorer Upper East, Upper West, and Northern regions, students

perform significantly worse than the wealthier southern regions ([↑Mikesell, 2018](#)). While matching boys' learning performance in the early grades, girls perform markedly worse than boys in all subjects except for social studies by the time they reach Grade 9 ([↑Mikesell, 2018](#)). A higher percentage of boys (26%) than girls (20%) qualify for tertiary education ([↑Mikesell, 2018](#)). According to a [↑UNICEF \(2023\)](#) review, of 102 countries with education financing systems, Ghana is in the top 20 countries with the least equitably distributed education financing regimes, with richer households benefiting from disproportionate public education expenditure compared to the poorest households.

To improve national learning outcome results, the MoE has made a commitment to significant education reforms, namely,

- development of teacher standards and improvements to pre-service teacher professional development;
- curriculum modernisation;
- introduction of free senior secondary education;
- targeted initiatives to increase accountability and learning outcome performance in primary education ([↑Raudonyte & Foimapafisi, 2022](#)).

The MoE has identified effective data usage as a key enabler for achieving its national learning outcome ambitions.

4.2. National education policy: Learning outcomes, equitable opportunities for education, and accountability reforms

Under its *Education Strategic Plan 2018–2030* (ESP), Ghana's MoE aims to ensure that all learners in Ghana have access to a quality education, with no child left behind ([↑MoE, Ghana, 2018](#)). Under the ESP, the overall goal of the Ghanaian education system is to:

“deliver quality education service at all levels that will equip learners in educational institutions with the skills, competencies and awareness that would make them functional citizens who can contribute to the attainment of the national goal”.

–[↑ Ministry of Education, Ghana, 2018, p. 14](#)

The ESP aims to achieve this through improving learning outcome performance across all Ghanaian education institutions, with a focus on three strategic policy priorities:

1. Improved equitable access to and participation in inclusive education at all levels.
2. Improved quality of teaching and learning and science, technology, engineering, and mathematics (STEM) at all levels.
3. Sustainable and efficient management, financing, and accountability of education service delivery ([↑MoE, Ghana, 2018](#), p. 17).

This case study focuses specifically on Ghana's ambition to improve its data governance and management capabilities, accountability, and performance to more consistently and successfully leverage its data to make the decisions necessary to reach its ESP strategic priorities.

As illustrated below, the MoE has been supported in this effort by a number of institutional and non-institutional financing/development partners.

4.3. Key development-partner-supported programmes

This section introduces the key development partners supporting the MoE's data-informed decision-making ambitions.

4.3.1. Ghana's Accountability for Learning Outcomes Project

Ghana's Accountability for Learning Outcomes Project (GALOP), running from October 2019 to December 2025 ([↑World Bank, 2024](#)), is Ghana's largest development-aid-financed education programme ([↑UNESCO, 2022](#)). The project's overall aim is "to improve the quality of education in low-performing basic education schools and strengthen education sector equity and accountability in Ghana" ([↑World Bank, 2024](#), p. 2). GALOP has four components, focusing on

1. Strengthening teaching and learning through support and resources for teachers.
2. Strengthening school support, management, and resourcing.

3. Strengthening accountability systems for learning.
4. Technical assistance, institutional strengthening, monitoring, and research.

During GALOP's project design phase, the MoE, World Bank and other education system stakeholders identified several constraints to improving basic school performance and national education system accountability. Many of these are directly related to data governance and management. Examples include an under-utilised education management information system (EMIS) with poor data sharing and feedback mechanisms, lack of collaboration between agencies and departments, and limited resources available for planning, monitoring, and evaluation ([↑Mikesell, 2018](#)).

GALOP directly supports the MoE's efforts to develop a comprehensive Performance Management and Data Visualisation system (PMDV), which will consolidate data across MoE agencies and departments and become an important vehicle for informing and strengthening decision-making. The PMDV's design ambition is to provide education stakeholders, whether at school, district, or national levels, with the accurate data they need at the right time and in the right format to support monitoring and decision-making.

The GALOP project design process also identified the absence of a national assessment strategy and tools as key blockers to national system improvements ([↑Mikesell, 2018](#)). Although strongly related to use-of-data and evaluation challenges, this case study does not cover this aspect in detail. For further explanation of how GALOP is addressing these issues, see [↑Ackwerh \(2024\)](#); [↑World Bank \(2019\)](#); and [↑World Bank \(2024\)](#).

4.3.2. Other programmes in collaboration with development partners

Other development partners providing support to the MoE's data-informed decision-making ambitions include: BigWin Philanthropy through its support for monitoring and evaluation and the UK's Foreign, Commonwealth and Development Office (FCDO) through its support of the MoE education reform process ([↑UNESCO, 2022](#)).

5. Ghana's journey to evidence-based decision-making

This section introduces Ghana's national education data system and provides an overview of challenges experienced. This section also includes an introduction to findings from the 2023 MoE data governance stakeholder analysis conducted by EdTech Hub ([↑Korboe et al., forthcoming](#)).

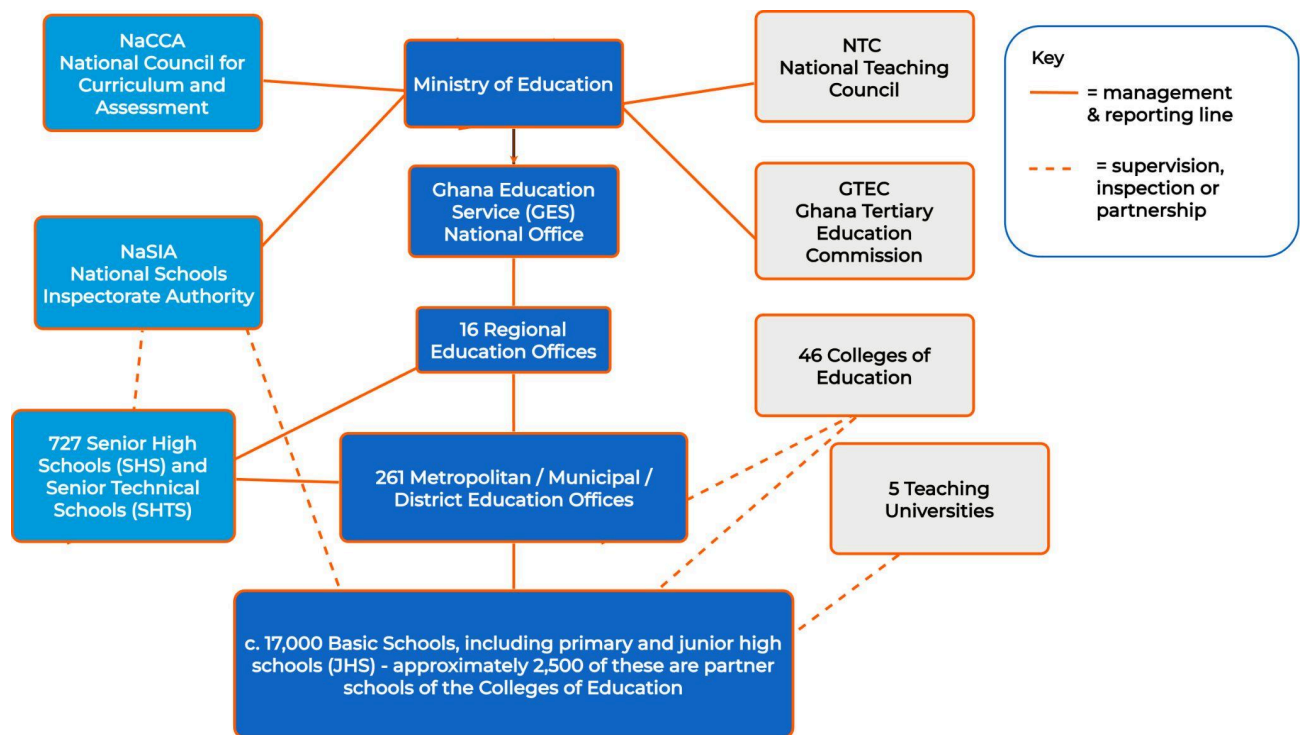
5.1. Ghana's national education data system

Like all national education systems, the MoE is a complex web of departments and agencies. Together, these are responsible for formulating national education policy and delivering a wide range of education services at primary, secondary, and tertiary levels. The MoE's service agencies have a diverse set of functions, including:

1. School enrolment
2. Technical and vocational education and training (TVET)
3. Recruiting, training, monitoring, paying, and supporting teaching staff
4. Maintaining appropriate infrastructure levels and quality
5. Co-implementing feeding programmes with the Ministry of Gender, Children and Social Protection (MoGCSP)
6. Assessing student learning
7. Managing student loan programmes
8. Allocating ministry human and financial resources ([↑Korboe et al., forthcoming](#)).

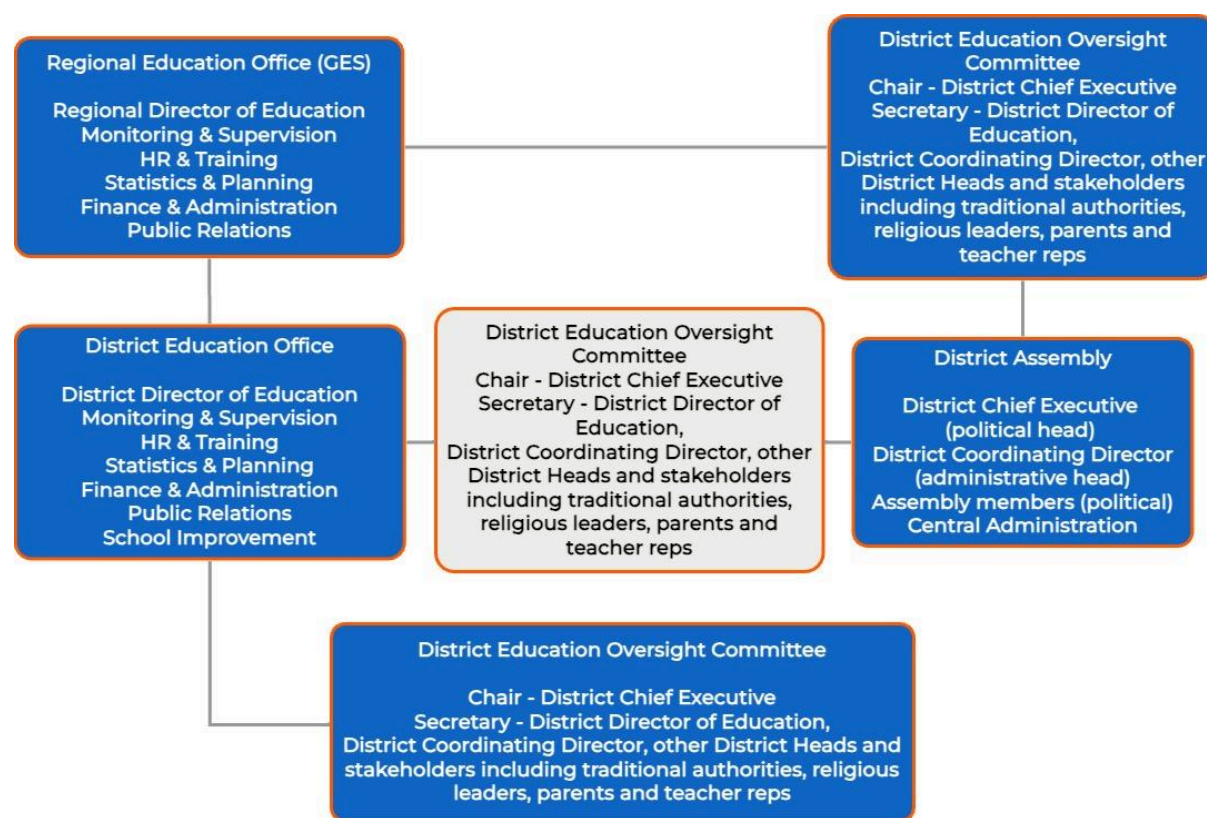
[Figure 6](#) and [Figure 7](#) below, while excluding the private education system, illustrate the considerable number of departments, agencies, and educational institutions involved in operating Ghana's public education system.

Figure 6. Key actors in Ghana's public education system, Part 1. Source: Adapted from [UNESCO, 2022](#).



In addition to the national agencies, departments, and learning institutions captured in [Figure 6](#) above, sub-national actors and agencies are shown in [Figure 7](#) below.

Figure 7. Key actors in Ghana's public education system, Part 2. Source: Adapted from [UNESCO, 2022](#).



All efforts to achieve the ESP's learning outcomes, equitable education, and accountability ambitions by strengthening the MoE's evidence-based decision-making capacity occur within this complex institutional framework.

5.2. Ghana's data system challenges

As captured in [Section 4.3.1](#) above, the GALOP project design phase identified several challenges to the MoE's data system performance. These included an underutilised EMIS with poor data sharing and feedback mechanisms, a lack of collaboration between agencies and departments, and limited resources available for planning, monitoring, and evaluation ([Mikesell, 2018](#)). Further reviews and studies examining data use in Ghana's national education system confirm these challenges and provide additional insight.

In their review of data use for global studies into MoE officials' use and perceptions of data, [Custer et al. \(2018\)](#) found that despite relatively strong performance compared to its West African neighbours, Ghana's national education data system was unable to generate accurate and timely information on learning outcomes, equity, and cost-efficiency. The utility of

Ghana's national education data system, like many of the countries reviewed, was constrained by data duplication, inaccuracies, and omissions and struggled to provide information in the manner and time required by its users, particularly at school and district levels. In their review of the use of learning assessment data by six sub-Saharan African countries, [↑Raudonyte & Foimapafisi \(2022\)](#) found that learning data, while largely accessible at the national level, was often unavailable at local school and district office levels.

5.2.1. Capability

Ghana, like many other countries, is faced with significant capacity shortfalls. Evaluation studies conducted with MoE officials document their frustration with the MoE's limited internal capacity to undertake analysis of complex challenges to learning outcomes ([↑Raudonyte & Foimapafisi, 2022](#)) and the small team sizes, for example, in the National Education Assessment Unit (NEAU), which struggle to manage their heavy and challenging workloads ([↑Begue-Aguado, 2021](#)).

As is the case for many other countries (see [Section 3.1](#) above for discussion), Ghana does not use common data identifiers across its national education system. This limits the MoE's ability to conduct data analysis across agency data sets, making it difficult to identify and diagnose education system challenges.

5.2.2. Opportunity

Restricted sharing practices in Ghana limit national education stakeholders' opportunities to utilise data on their students and on their own performance. MoE officials at district levels report that assessment and other data irregularly or often never reaches district and school levels ([↑Raudonyte & Foimapafisi, 2022](#)). Resource constraints, for example, the absence of internet connection, computers, and other data collection equipment, further restrict Ghana's MoE officials, particularly those working outside the national or central levels, in collecting, analysing, and using data ([↑UIS, 2021](#)). MoE officials also report financial barriers to acting on data when it is available, "it's like we always say, you may know about a problem, but the resources to fight or solve it are out of reach" ([↑UIS, 2021](#), p. 6).

5.2.3. Motivation

[↑Raudonyte & Foimapafisi \(2022\)](#) highlight politically motivated considerations and reactions hindering the development of an effective and open data culture. They use the example of MoE stakeholders'

perceptions that poor performance in the Trends in International Mathematics and Science Study (TIMMS) led to Ghana's withdrawal from this global assessment exercise.

This observation, while reflecting MoE stakeholders' perceptions, warrants some additional analysis. The inclusion of STEM subjects within one of the three strategic priorities under the ESP, "improved quality of teaching and learning and STEM at all levels" ([↑MoE, Ghana, 2018](#), p. 17) and demonstrates the MoE's recognition of the need for improvement in learning results in maths and science. This example, as discussed below, also highlights how a lack of local ownership of national education data can impact stakeholders' motivation to engage, as well as their capacity and opportunity to act on knowledge and evidence generated.

There is a tension between the requirement by global education research and development actors for the use of validated assessment tools such as EGRA/EGMA² and TIMMS, for development project outcome measurement, and the MoE's ambition to invest in its national learning assessment capacity. During [↑Raudonyte & Foimapafisi's \(2022\)](#) review of Ghana's learning assessment data use, MoE officials questioned whether funding for development project learning evaluations using external international contractors might not be better redirected (at least partly) to strengthening national assessment capacity. The argument is that this would result in better learning data availability for schools, districts, and national MoE institutions and staff. The review recognised that the sample-based, rather than national census-based data collection approach of development project-linked evaluations is understandable in terms of cost-effectiveness and global research norms and practice considerations. However, this can mean that learning data is not available for all geographies and specific schools, reducing its utility for local-level decision-making ([↑Raudonyte & Foimapafisi, 2022](#)).

Such arguments are strengthened when research data cannot be made readily available to ministry officials—as was the case for EGRA/EGMA data collected by RTI International in Ghana. Note the reflections from ministry officials and World Bank representatives on this specific case:

“EGRA and EGMA were problematic: I would need to send an email to DC for clearance. We did not have easy access to that data, we needed to ask

² EGRA = Early grade reading assessment and EGMA = Early grade mathematics assessment.

permission and send an email (MoE representative).

The release of the national EGRA/EGMA data needed to be approved by the USAID staff in Washington (World Bank representative).

It was analysed online using an application designed by the USAID board. I remember it was adopted from the state of Virginia. I don't have details of how it was done, but I know it was an online system that did it" (Regional planning officer).

– ↑Raudonyte & Foimapafisi 2022, p. 157

Generating evidence using robust and validated assessment tools can be extremely valuable for analysing national education system performance and identifying quality improvement strategies. However, such practices run the risk of creating a perception that development partners and their contractors are the 'owners' of MoE system data (↑Begue-Aguado, 2021; ↑Raudonyte & Foimapafisi, 2022). The MoE, with support of its development partners, is now investing in developing its national assessment capacity (↑UNESCO, 2022; ↑World Bank, 2019; ↑World Bank, 2024). This should help address availability, relevance, and ownership concerns experienced by MoE officials during earlier evaluations of learning outcomes.

5.3. Data governance: The journey

This section provides case study examples of how the MoE is progressing towards its evidence-based decision-making ambitions, with a focus on data governance. We do this through the lens of the data governance framework introduced in [Section 3.4](#) above.

The data governance framework takes into account that robust data governance regimes require:

- Clearly articulated data vision and purpose
- Appropriate policy, legislation, and risk mitigation frameworks
- Agreed data principles
- Clear roles and responsibilities
- An endorsed data governance and management strategy.

The discussion below is not an evaluation of MoE data governance efforts to date but provides a snapshot of the activities undertaken and challenges faced. The case study examples reinforce the complexity of building a robust data management and governance system.

The discussion below highlights several key findings from the MoE data governance stakeholder analysis conducted by EdTech Hub in 2023 ([†Korboe et al., forthcoming](#)). In general, the analysis identified that MoE officials are anxious to use their data more effectively, but do not always have the tools, human resource capacity, or institutional data to do this. Greater institutionalisation of data governance across the MoE, for example, through developing an MoE data vision and purpose, supported by a data strategy, will aid these efforts. Further leveraging important Ghanaian technical expertise, for example, through deeper collaboration with the Data Protection Commission (DPC) will be useful.

The example of **data vision and purpose** in [Section 5.3.1](#) highlights that while there are examples of individual agencies with strong data visions and purposes, the MoE does not yet have an overarching data vision and purpose. This is an area for attention in the future.

The example of **policy, legislation, and risk management frameworks** in [Section 5.3.2](#) highlights the important role of the DPC in supporting the MoE and its agencies and departments to improve their data governance and management capacity. The example further highlights that there is an opportunity to strengthen the MoE's performance through establishing a data governance and risk framework.

The example of **roles and responsibilities** in [Section 5.3.3](#) highlights two examples of data governance architecture identified during the stakeholder analysis ([†Korboe et al., forthcoming](#)). Despite these examples, the analysis did reveal that the development of clear roles and responsibilities for data operations and control was an institutional system capacity-development priority for the MoE, its agencies and departments.

Importantly, all examples illustrate the presence and use of good practice within the MoE and its agencies and departments. This provides both inspiration and knowledge for the next stages of the MoE's ambitious plans to improve its ability to harness and realise the value of its data.

5.3.1. Data vision and purpose

Clearly articulated data vision and purpose can serve as a rallying call for stakeholders across Ghana's national education system, creating a common understanding and endorsement of the MoE's rationale for

investing in its data capabilities. This common understanding is an important first step in building a data-driven culture.

The MoE has not yet agreed on a unified data vision and purpose to guide the ministry's endeavours, but there is ample room to harness internal enthusiasm and ideas of what a common rationale for collecting and using data might be. The MoE stakeholder analysis on data governance, conducted by EdTech Hub in 2023, captured a diverse set of potential data visions and purposes (↑Korboe et al., forthcoming). As can be seen in Figure 8 below, these ranged from those focused on fulfilling reporting mandates to internal and external partners to more ambitious visions, which seek to use data to achieve excellence in education service delivery (↑Korboe et al., forthcoming).

Interestingly, there is a desire to identify students who are struggling academically and strategies to assist features in several MoE respondents' purpose statements. As illustrated below, many respondents articulated their data vision in terms of their own agency or department's mandate, rather than for the MoE as a whole. Data purpose statements often focus on outcomes related to data management capacities, such as data collection and analysis and data reporting and dissemination.

Figure 8. Example data visions shared by respondents during data governance stakeholder analysis undertaken by EdTech Hub (↑Korboe et al., forthcoming).

- *"[...] to foster uniformity in data and collective research, providing information that is accurate and consistent."*
- *"[...] to have an effective system to collect, analyse, and generate information to support planning and other decision-making."*
- *"[...] data is gold. We see data as critical for informing decision-making in all our work. For every project or activity, the Director demands to see data."*
- *"By the act [of Parliament] establishing [this agency] we are supposed to keep a registry of schools [... so] we are the custodian of the registry. We want [...] to be seen as the go-to institution for credible data for education policymaking."*
- *"To collect data from all agencies to be able to report effectively on education in Ghana [...] for policymaking purposes."*
- *"[We] aspire for consistent teacher availability and professionalism. By collecting, analysing, and reporting data on all teachers across the*

country, the Council aims to support planning to achieve adequacy in teacher numbers and qualifications.”

- *“We aim to reach a point where we’re able to compute data gathered from patrons [...] to predict reading preferences [so that] we can serve patrons better [...] by recommending more relevant books and reading materials.”*
- *“We see data as critical in enabling us to prove our value proposition and, thus, helping us to be more attractive to our clients and funders. It helps us make a stronger case for alternative sources of funding [beyond the traditional state sources] to reach new clients such as nurse trainees. So, data informs all the decisions we make.”*

Figure 9. Examples of the perspectives of respondents on the purpose of data during the data governance stakeholder analysis undertaken by EdTech Hub (†Korboe et al., forthcoming).

- *for “[...] making [...] decisions on content, to sharpen project design, and make our services more relevant.”*
- *“[...] for processing examinations and assessing institutions for accreditation” (in line with the provisions of Act 1023, 2020).*
- *“[...] to serve as a backup for the [sub-]sector” (if the institutions supervised should ever lose their data, for which there is a precedent) and “for policy formulation”.*
- *“[...] for advising on policymaking in the areas of infrastructure priorities and to curtail teacher absenteeism, to attract donor resources for education interventions, and to assist schools in improving on their outcomes.”*
- *“[...]to report to the AU, ECOWAS, and UNESCO to support their tracking of schooling outcomes.”*

5.3.2. Policy, legislation, and risk management frameworks

During the stakeholder analysis (†Korboe et al., forthcoming), the most commonly mentioned policy framework was the Data Protection Act, 2012 (Act 843). Established under the Act, the DPC provides significant support to agencies to develop and manage their data governance management (including data privacy and security) systems (†Korboe et al., forthcoming).

Currently, the MoE has five agencies registered with the Data Protection Commission:

1. Student Loan Trust Fund
2. National School Inspection Authority
3. Ghana Library Authority
4. National Teaching Council
5. Centre for National Distance Learning and Open Schooling.

Figure 10 below provides an example of the support received by the National Teaching Council from the DPC.

Figure 10. *An example of policy and practice improvements made by the National Teaching Council with support from the Data Protection Commission (†Korboe et al., forthcoming).*

National Teaching Council

Following a data breach in 2018, the National Teaching Council has taken a critical approach to data protection and privacy. The National Teaching Council has a proactive relationship with the DPC as part of its commitment to safeguarding the health of its institutional data. There is strong upper management support for maintaining robust data privacy and security. All staff members participate in quarterly data awareness training events. New teachers recruited under the National Service Scheme (NSS) also benefit from induction sessions. Other deliberate measures include:

- Use of access control measures;
- Dual storage arrangements (cloud and on-site server) to abate the impact of ransomware;
- Training and certification of four Data Protection Supervisors who ensure that data is consistent, reliable, and is not abused;
- Use of bastion host designed and configured to withstand attacks;
- Biannual vulnerability testing on web portals.

The MoE does not yet have a data governance policy or data risk management registry. This restricts the MoE's ability to develop a consistent approach to data management across the education system and mitigate risks involved in data collection, analysis, use and sharing.

5.3.3. Roles and responsibilities

The development of clear roles and responsibilities for data operations and control is an institutional development priority for the MoE and its agencies and departments. In general, the stakeholder analysis revealed that roles and responsibilities in this area are unclear. There are, however, strong examples of good practice. Two examples are shown in [Figures 11](#) and [12](#) below. The first, from the National Teaching Council, is an example of a simple data governance structure, and the second, from the Student Loan Trust Fund, is an example of a more complex structure.

Figure 11. A summary of the National Teaching Council's data governance structure ([Korboe et al., forthcoming](#)).

At the National Teaching Council, data is governed through a three-point structure developed in-house, with consultation and advice from the Ghana Data Protection Commission (DPC). The structure comprises:

- A data protection committee
- A data protection officer
- Four certified data protection supervisors.

The data protection committee comprises the head of the audit, administration, and human resources functions to ensure high-level ownership of, and a strong commitment to, the agency's data strategy. The data governance function is supported through training by the DPC, who provide further assistance by reviewing the National Teaching Council's draft policies. The committee holds monthly meetings to reflect on and make progress on the agency's data governance strategy. Within the National Teaching Council, the data protection officer has immediate responsibility for the institution's data governance operations and serves as secretary to the committee.

The DPC developed the standards and policies for governing data as well as the implementation and enforcement procedures, and reviews the effectiveness of the agreed strategy.

Figure 12. A summary of the Student Loan Trust Fund's complex data governance structure ([↑Korboe et al., forthcoming](#)).

The Student Loan Trust Fund operates a comprehensive governance structure with

- A seven-member Management in Information Systems (MIS)/operations committee of the Student Loan Trust Fund board.
- A seven-member risk committee (constituted by representatives of the agency's seven directorates).
- A seven-member (core) data protection surveillance committee (constituted by the seven directorates).
- A fourteen-member zonal data protection surveillance committee (constituted by the agency's 14 geographic zones).
- A legal/complaints subcommittee of the board, to receive and process complaints in a timely and systematic manner.

Below are some functions highlighted from the interviews:

- The MIS/operations committee has policymaking functions.
- The risk committee has responsibility for quality control.
- The legal/complaints subcommittee is responsible for compliance.
- The surveillance teams have day-to-day responsibility for stewardship.

6. Conclusion and upcoming case studies

The MoE is making significant strides in strengthening its national data system and has worked to convene development partners' programming around this important initiative. To lay the foundations for accelerated progress in the coming period, the MoE could focus on the further institutionalisation of data governance, including by agreeing upon an MoE-wide data vision and purpose and developing a data strategy.

Through its engagement with the Reform Delivery Unit, EdTech Hub has been involved in initial conversations to develop a plan for this institutionalisation process. Data management practice quality improvements are ongoing, with building in-house technical capacity and rolling out a data glossary with common identifiers as key priorities. Fostering collaboration and compliance across the MoE and its agencies and departments will be essential.

This case study is the first in a series capturing the MoE's journey towards evidence-based, informed policy and practice. The study establishes the case for investing in data governance and data management practice to support the MoE's ambitions to improve learning outcomes, reduce education inequalities, and strengthen education system accountability through more evidence-based decision-making. The case study provides background into the opportunities and challenges facing the MoE as it builds a fit-for-purpose national education data system, based on principles of local ownership and responsibility.

In line with the MoE and EdTech Hub's collaboration plan, subsequent case studies will focus on two areas: 1) data management capacity development processes and 2) how the MoE is fostering stakeholder engagement and uptake by utilising user-based design principles. An analysis of the MoE's PMDV project implementation process will provide rich experiences to inform these upcoming case studies.

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<https://docs.edtechhub.org/lib/BVSQHFG>

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