Improving Information Systems for Planning and Policy Dialogue: The SABER EMIS Assessment Tool

SABER (System Assessment and Benchmarking for Education Results)

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1. Introduction

The main objective of this paper is to present a new tool for assessing and monitoring the quality of education statistics. This tool is a key component of the Information System for Planning and Policy Dialogue and was developed under System Assessment and Benchmarking for Education Results (SABER), a new World Bank initiative for improving education quality.

The production and dissemination of education statistics of high quality is essential for effective education sector planning and for monitoring progress toward national and global education targets. Good access by the public and by education analysts to education statistics is also an important lever for accountability. The combination of good policy and increased accountability is likely to produce better quality in education (Bruns, Filmer, and Patrinos, 2011).

The recent evidence suggesting that the quality of education has a significant and positive impact on economic growth (Hanushek and Wößmann, 2007) has generated a new set of goals for education and a renewal of the portfolio of education policies, which are now progressing from an emphasis in universal education coverage to an emphasis on universal education quality. During the last four decades many developing countries have made great efforts at achieving universal coverage in primary education. However, the available evidence from test scores clearly shows that universal coverage is not enough to produce an educated population and that efforts now should shift to producing education of better quality (Moursheed, Shijioke and Barber, 2010).

In the case of universal coverage, the policy emphasis was on school infrastructure and improving net enrollment rates. By now, school enrollment among children of primary school age is almost universal in many low and middle income countries, and now the goals should be to ensure that children increase their level of learning. This progression towards new goals in education suggests some immediate changes in education policies and educational institutions[1]:

   a. Learning must be measured and reported regularly,
   b. Teachers should be well selected and well paid,
   c. Schools should have operational autonomy to increase their efficiency in the use of financial and human resources,
   d. The Education Management Information Systems (EMIS) should be a primary mechanism for monitoring progress and for fostering accountability.

This new portfolio of policies and activities gives education data and statistics a prominent role in the transition from education coverage to education quality, a role that strongly suggests that Education Management Information Systems (EMIS) pay more attention to the relevance, timeliness and quality of the data necessary for policy planning and decision making.

2. Education data for improving planning and policy dialogue

As pointed out in the new World Bank Education Sector Strategy the production and dissemination of reliable education statistics is essential for effective education sector planning and for monitoring progress toward national and global education targets such as the Millennium Development Goals

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[1] For an review of learning assessment systems see Clarke (2010); for the role of teacher selection and teacher salaries on education quality and learning see Darling-Hammond (1999), and Mourshed, Shijoke and Barber (2010); for the role of school autonomy in high achieving countries in Europe see Arcia, Patrinos, Porta and Macdonald (2010); for school autonomy and accountability as key components of school-based management consult Barrera, Fasih, and Patrinos (2009) and for the role of EMIS in accountability consult Crouch (1997).

(MDGs). Good access to education statistics for all countries is also an important global public good that is normally not supplied by markets. Because of the need for increased availability of reliable education statistics, the World Bank, in collaboration with UNESCO, the donor community, and local governments, has been working to promote the production, dissemination and use of education statistics.

Accurate and reliable information on education sector performance is crucial for designing policies and programs. Even in environments where the political economy of education may suggest that education statistics, education policy analysis, and data on sector performance take second place to political decisions, policy makers often use education data as points of reference for their political decisions (Crouch, 1997). In recent years many countries have made substantial reforms to their education systems, moving toward a greater degree of decentralization of education and the use of performance indicators and the measurement of learning outcomes to monitor educational performance and to reinforce accountability (Bruns, Filmer, & Patrinos, 2011). The successful implementation of these reforms requires the intensive use of education statistics and education indicators on school and student performance held within Education Management Information Systems (EMIS) (Arcia, Patrinos, Porta, & Macdonald, 2011; Cassidy 2005;).

In order to evaluate the education sector in any country, analysts need to have access to indicators of educational performance at different levels, which requires them to analyze the indicators of internal efficiency, as well as any other indicator that may relate to the monitoring of policy impacts. As countries' education systems move toward decentralization and accountability, emphasizing the access to and use of education statistics becomes a necessary part of policy implementation (Filmer and Rubio-Codina, 2011; Kitamura & Hirosato, 2009). Analysts also need to know about the internal efficiency of the education system and about the social and economic variables that help explain student performance. For example, educational expenditures by households and the different types of expenditures on students help analysts evaluate the potential winners and losers of changes in education policy. In particular, household level data can be an important source of information in evaluating the impact of education expenditures on equity, living standards, and social outcomes (Das, 2004). After all, education is considered as the key element on long-term poverty reduction, since it is a key component of social and economic mobility (Hanushek and Wößmann, 2007).

Despite the considerable efforts made to improve the availability and quality of data, much work remains to be done to generate reliable and timely education statistics at the global level (Porta and Klein, 2010). As the operation of the education sector benefits more and more from connectivity to the internet, the quick access to education statistics and educational data has become a norm which is gradually being matched with increased quality—accuracy, reliability, timeliness, and relevance—in education data. Progress from low to high levels of data quality can be made in a shorter period of time by following simple procedures for the identification of areas for improvement and the conversion of the assessment of data quality into an action plan.

Many of the current efforts at improving the quality of education are centered on the concept of accountability. Rendering accounts to society is the best way to ensure the sustainability of education policies and of education information systems, since good information and data permits the identification and nurturing of good teachers and the monitoring of programs that improve learning (Bruns, Filmer and Patrinos, 2011). Education statistics is crucial for improving accountability and its effectiveness is in great part driven by the quality of educational statistics, since information about education performance is the only vehicle for accountability that the central government has for informing society at large about the performance of its education sector (Barrera, Fasih and Patrinos, 2009).

2.1   The importance of data quality in EMIS

Because of the need for relevant, timely, and accurate educational statistics, countries are now paying close attention to their EMIS and to the quality of its data and statistics. The added cost of improving data is likely much lower than the implicit costs of bad information. For example, if enrolment data only become available nine months after the school year begins there is not much that the government can do to reallocate teachers to improve student teacher ratios across schools for that year. The overcrowded classrooms in the system will remain overcrowded while other classrooms nearby might be almost empty. The proper government response will come one year too late. Planning with old data is a deterrent for optimal policy implementation (Cassidy, 2005).

Audits of student enrollment are more the exception than the norm. But in the cases when government or non-governmental organizations have carried out this type of exercise the evidence shows significant problems in operational efficiency. In countries where the government transfers resources on the basis of enrollment, the amount of misallocated funds can be very high. In the Kamuli district of Uganda, many schools were found guilty fraudulent enrollment; school funding was based on a per-student funding formula that was not well supervised[2]. In Somerville, Massachusetts, a charter school had been inflating enrollment by 25 percent[3]. There are documented cases where more than 15% of the overall education budget is disbursed to cover the costs of non-existing students (Porta and Ramirez, 2007)[4].

It is also common to find that information systems do not measure education indicators that could improve sector performance. Most governments have education plans but only a few have implemented a monitoring system that allows them to track the progress made on achieving their policy objectives. In 1993, Wolff, Schiefelbein, and Schiefelbein surveyed education experts in Latin America and asked them about the most cost-effective policies for improving learning outcomes. The number one recommendation from the experts was to assign the best teachers to the first grade of primary; it was considered the most cost-effective solution. Many governments and policy makers in LAC agreed with this finding and included this recommendation, but it was never implemented because no EMIS in Latin America was tracking teacher performance.

From the above discussion it can be determined that improving education sector performance can be very difficult if statistical information is late, erroneous, or if it does not exist. Clearly, improving the timeliness, accuracy and reliability, and relevance of education data and education statistics is extremely important in the process of moving from universal coverage to universal quality.

2.2   The New EMIS: Benchmarking Information Systems for Planning and Policy Dialogue

To support the implementation of its forthcoming Education Strategy 2020, the World Bank launched SABER (System Assessment and Benchmarking for Education Results), a multi-year program designed to help countries to systematically examine and strengthen the performance of their education systems. To

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[2] The Minister of Education indicated that the Government was losing a lot of money on ghost pupils and singled out the Kamuli district where 200 million Ugandan shillings were recovered after a headcount of students discovered that many schools had ghost students. http://rwenzururu.com/education.html

[3] http://somervillenews.typepad.com/the_somerville_news/2005/03/superintedent_b.html

[4] It is very telling that there is no systematic study of inflation in school enrollment or on the cost of enrollment errors. The evidence to date comes from very few studies, and the discussion in most cases hovers around fraud prevention in the context of conditioned cash-transfer programs in Mexico, Brazil, Honduras, and Nicaragua, where the administrative agency puts into place a system of controls to ensure that all students receiving a subsidy are actually enrolled.

that end, SABER is building a "comprehensive toolkit of system diagnostics to examine education systems and their component policy domains against global standards, best practices, and in comparison with policies and practices of countries around the world"(World Bank, 2011).

SABER will fill the existing gaps in the availability of policy data, information, and knowledge about the factors that affect education quality and about the variables that can be transformed to improve the quality of education. In that regard, SABER is developing the knowledge base that policymakers and citizens worldwide can tap to identify the reforms needed to improve learning outcomes. SABER toolkits will allow for the assessment of data and policies of education systems, enabling governments and civil society to take an objective look at their education system, to compare their performance with other countries, and to determine which types of changes and policies could be implemented to improve learning[5].

In SABER there is an explicit recognition that Education Management Information Systems (EMIS) do not exist in a vacuum. They are created to pivot the use of information for improving operational efficiency and education quality. In essence, EMIS is being transformed into an *Information System for Planning and Policy Dialogue.*

To benchmark a country's information system for planning and policy dialogue SABER began developing a new EMIS assessment tool based on the six sections of the Data Quality Assessment Framework (DQAF), a tool originally developed by the International Monetary Fund and later adapted to other sectors by UNESCO Institute of Statistics (UIS) and The World Bank[6]. Each of the DQAF's six Aspects of Quality addresses a component of overall data quality. A brief description of each of the Aspects of Quality is shown below.

2.2.1 Prerequisites of quality

Before assessing the quality of the EMIS, its data and its statistics it is necessary to examine the legal and institutional conditions that could affect data quality. These conditions could be considered prerequisites of quality and their assessment would indicate if a country has the legal and institutional conditions for fostering data quality. The prerequisites of quality include: Legal and institutional environment which affects the operations of the agency or office in charge of education statistics; the adequacy of staff and financial resources available for statistical work; and the awareness of the importance of quality in statistical work among key stakeholders.

2.2.2 Assurances of Integrity

This Aspect of Quality assesses the integrity of the entire educational data system, including the collection of school and survey data, the compilation of education data, the production of indicators, the production of statistical reports and their dissemination within government and to the general public.

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[5] A comprehensive explanation of SABER toolkits and components can be found at http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTEDUCATION/0,,contentMDK:22550608~menuPK:282391~pagePK:148956~piPK:216618~theSitePK:282386,00.html. Some of the policy domains included in SABER are: School and Student Assessment, Early Childhood Development, Education Finance, School Autonomy and Accountability, School Quality Assurance and Teacher Policies.

[6] For a short history of the development of DQAF and the IMF efforts at improving data quality see Carson (1997). The annotated DQAF used in this manual is based on the framework used by The World Bank and UNESCO Institute of Statistics (Patel, Hiraga, and Wang, 2007; Patel, Hiraga, Wang, Drew, and Lynd, 2003), which is an adaptation of the original framework developed by the IMF.

To assess data integrity one needs to examine the institutional arrangements in place that can be used to ensure that all activities covered by the system of educational statistics are done in a professional manner, with transparency and ethical standards. Hence, assessing data integrity relies on the examination of the professionalism of staff in charge of education statistics, the transparency of all process of data collection, compilation and publication, and the ethical standards of the statistical agency to ensure that the data published are the same as the data collected.

2.2.3 Methodological soundness

Methodological soundness assesses if the statistics produced are compliant with internationally accepted standards, guidelines, and good practices. It asks if the methodologies used by the EMIS are aligned with the methodology used by international agencies and if the education indicators comply with the international standards of UNESCO Institute of Statistics (UIS) or the Organization for Economic Cooperation and Development (OECD). Although there is no obligation to adhere to international standards, it is intuitively obvious that countries want to share common concepts, definitions, and indicators in order to make valid comparisons and advance education sector performance. This Aspect of Quality has four areas of assessment: Concepts and definitions, scope of the statistics being collected and published, the classification of education statistics, and the standards for recording statistical information.

2.2.4 Accuracy and reliability

This Aspect of Quality starts from the notion that source data are of sufficient quality and scope to enable the education sector to compile an adequate set of educational statistics; that the statistical techniques used in the production of source data are sound; and that source data, intermediate data, and statistical outputs are regularly assessed and validated, inclusive of revision studies. To this end this Aspect of Quality assesses administrative data collected by the school system as well as data coming from other sources in the national statistical system to determine if the sources of data have procedures in place to ensure accuracy and reliability. In addition, this Aspect of Quality assesses the statistical techniques used in the compilation of source data, and also if there are procedures in place for the assessment and validation of source data, for the assessment and validation of intermediate data and statistical outputs, and if there are formal procedures for revising data and for making public the revisions in a timely manner.

2.2.5 Serviceability

This Aspect of Quality assesses the ability of the EMIS to be at the service of the citizenry by ensuring the relevance and timelines of its statistics, by ensuring consistency and by striving for usefulness. Educational statistics have to be relevant for policymaking and should allow parents and civil society to obtain objective information about sector performance in a user-friendly manner. To do that it should deal with four different areas of data quality: the relevance of the statistical information, timeliness and periodicity of published statistics, the consistency of data and education statistics with data from other sources and sectors, and the implementation of clear policies for data revisions.

2.2.6 Accessibility

This Aspect of Quality assesses the different ways in which educational data are accessible to the general public and to any other potential user. As such, it is one of the most important aspects of data quality because it addresses the issue of accountability. It covers three areas of assessment: the accessibility of data and metadata to analysts outside of government, the accessibility of education statistics to the general public, and the existence of programs and procedures for assisting users[7].

3. The Development and Use of the SABER EMIS Assessment Tool (SEAT) for Benchmarking EMIS

The Data Quality Assessment Framework (DQAF) is a flexible structure used in the qualitative assessment of education statistics. The main objective of its application is to review the quality of education data and to install the local capacity for data quality assessment on a periodic basis. The objective of the overall effort is to assist local units in charge of educational statistics in member countries in improving the quality of their education statistics and in the maintenance of high standards in their education management information systems.

The DQAF was not designed for benchmarking purposes; it only highlighted the areas where an EMIS should focus on improvement. However, by not benchmarking the assessment, it was very difficult to link the results of the assessment to a set of priorities and, by inference, to a work plan.

Also, several countries applied the DQAF but their results were not comparable across countries since they were heavily reliant on the subjective assessments of assessors and on non-quantifiable criteria. Hence, there was also a need for a more objective scoring tool that would allow for an easy comparison across time within a country, as well as easy comparison between countries.

These were the main reasons why SABER developed the **SABER EMIS Assessment Tool (SEAT)** that builds upon the DQAF structure and Aspects of Quality to obtain a data quality score. The SEAT allows for comparisons across time and across countries. It was tested in six countries in the Caribbean with excellent results.

Section 3 of this document is a manual for utilizing the SEAT to conduct an assessment of data quality. It can be used to conduct a self-assessment—with the caveat that in any self-assessment there is great risk of self-delusion—or as a guide for conducting an external assessment of data in an office or institution in charge of education statistics. It is important to mention that the SEAT can be comparable across countries if the same team of assessors conducts the assessment[8] or if the tool is utilized in the same way by different teams of assessors. The comparability across countries will increase with proper training on the use of the SEAT by each assessment team.

The SEAT takes about one week to conduct depending on the degree of preparedness of the staff and the time allocated to the activity. Also, participating staff in the host country should know the materials

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[7] The term *metadata* refers to data that contains information about one or more aspects of the data, such as: means of creation of the data, purpose of the data, time and date of creation, placement on a computer network where the data was created, or standards used.

[8] The comparability of the results of the Caribbean pilot was ensured by utilizing the same team of assessors for all six countries.

needed for the assessment in advance. It is recommended that staff being interviewed or assessed be asked to review the following items in advance:

a. *The law governing national statistics.* If there is no law, there might be a decree or any other governmental document outlining the regulations associated with the collection, processing and publication of statistics, and the rights and obligations of citizens about the provision of personal information to the institution.

b. Any *informal or working arrangements* with institutions such as the Ministry of Finance and the Central Bank for the sharing of statistical information; these sharing or informal arrangements sometimes exist because the education law may not have been approved yet or it may not mention education statistics.

c. A *copy of this manual*, which contains the scoring rules to be used to answer each of the questions in the assessment.

T*he SEAT c*an be conducted individually, but it is more efficient to conduct it in small groups, si**n**ce there is a better chance for reaching a quick consensus on some of the questions that may be more subjective. It is also advisable that the person leading the assessment has access to a board or screen to discuss the scoring associated with each question.

Each participant in the assessment must be provided with a copy of this manual, which is summarized in Annex 1, and a SEAT Scorecard (Annex 2), where the responses to each question are tabulated.

Each topic covered in the assessment is an implicit question, and each participant should choose a response among the five responses suggested in the scoring table below it. If the content of the scoring table does not match the response, the participant should choose the closest match and clarify the answer in the Comments section of the SEAT Scorecard. Items marked with a bullet point are examples that can be used to assist the discussion and to clarify the intent of the question.

3.1 Legal and institutional environment

The objective of assessing this component is to determine the degree to which the legal and institutional environments are supportive of educational statistics. Assessing the legal and institutional environment through an interview may be difficult, especially since only a few people in the national statistics system may have knowledge of the legal framework for statistics.

In the following sections of this manual all participants need to analyze each of the bulleted items used to assess the question. Based on the quick analysis of the bulleted items participants assign a score using the scoring table attached to each question.

3.1.1 The responsibility for collecting, processing, and disseminating statistics is clearly specified.
- A law exists that assigns the primary responsibility to an institution or an agency for the collection, processing, and dissemination of education statistics. The law can be in the form of a statistical law or other formal instrument (i.e. executive decree).
- Working arrangements with other institutions are consistent with this assignment of responsibility.

Indicator 0.1	Choose one response in the response matrix and clarify with comments whenever necessary				
	0	**0.25**	**0.5**	**0.75**	**1.0**
Responsibility for collecting and disseminating education data is clearly specified	No lines of responsibility defined and no law	Limited agreement on responsibilities and no law	Wide agreement on responsibilities but no law	Law exists but vague on responsibilities; it needs clarification and/or updating	Law with clear roles and responsibilities being implemented

3.1.2 Data sharing and coordination among data producing agencies are adequate to facilitate data sharing and cooperation between the education statistics agency and other data producing agencies.

- Arrangements or procedures are in place to ensure the efficient and timely flow of source data between the education statistics agency and other data producing agencies.
- Arrangements are in place to ensure the consistency of methods and results.
- There is regular contact with other data producing agencies to coordinate data requirements, to avoid duplication of effort, and to take into account respondent burden.

Indicator 0.2	Choose one response in the response matrix and clarify with comments whenever necessary				
	0	**0.25**	**0.5**	**0.75**	**1.0**
Data sharing and coordination among different agencies are adequate	No sharing, no arrangements, no consistency	Informal agreement; sporadic/ad hoc sharing	Informal agreement to share exists and is mostly implemented	Formal agreement to share exists but not implemented completely	There are formal arrangements, logistics, and verification of consistency for inter agency cooperation

3.1.3 Respondents' data are always confidential and used only for statistical purposes. Also, the *confidentiality* of individual respondent's data is guaranteed and that guarantee is widely known.

This question has two subcomponents: (i) the existence of a legal framework for the confidentiality of individual data, and (ii) the existence of actual procedures that ensure confidentiality.

- The law (or decree) clearly states that whenever school administrative data or survey data are collected, the individual responses are confidential and shall only be used for statistical purposes.
- Before answering survey questions respondents are informed of their obligation to provide a truthful response, and the rights to have that response treated in complete confidence.
- There are clearly stated penalties against staff that disclose confidential data and those penalties are enforced.
- Staff reviews all data ready for dissemination for possible indirect disclosure of confidential data and devise tables and outputs in a way that prevents disclosure.
- Access to individual data is restricted to staff who require the information in the performance of their duties.
- Data storage at the education statistics agency is secure enough to prevent unauthorized access to individual data.

- Confidentiality of data is secure during storage and during the process of the destruction of records.

Indicator 0.3	Choose one response in the response matrix and clarify with comments whenever necessary				
	0	**0.25**	**0.5**	**0.75**	**1.0**
Individual/personal data are kept confidential and used for statistical purposes only	No Law; No Confidentiality	Law, but no confidentiality	Law, some confidentiality	Law and confidentiality, but respondents not informed of their rights	Law, Confidentiality, full rights

3.1.4   There is a legal mandate that ensures that individuals give their response to statistical or survey questions.

This question has two subcomponents: (i) there is a legal mandate that gives the education data agency the authority to collect information, and (ii) the provisions made by the agency to assist individuals in their response to the questions.

- The agency has the legal authority to collect data required to compile educational statistics.
- Any conflicts between the legal authority of the agency and other laws or provisions have been successfully resolved.
- Individuals know that there are penalties for noncompliance with reporting requirements (including misreporting), even if such provisions rarely need to be employed.
- The agency considers carefully the burden for respondents and provides them with assistance in completing and submitting forms and information
- The agency tries to create goodwill to secure the cooperation of respondents (e.g., by answering all the respondent's questions, by explaining the benefits of the data, and by being informative about the overall need for their responses and their use)

Indicator 0.4	Choose one response in the response matrix and clarify with comments whenever necessary				
	0	**0.25**	**0.5**	**0.75**	**1.0**
Statistical reporting is ensured through legal mandate and/or measures to encourage response	No legal mandate, conflicts unresolved, no penalties, no assistance	Informal arrangements, conflicts unresolved, no penalties, yes assistance	Legal mandate, conflicts unresolved, no penalties, yes assistance	Legal mandate, conflicts resolved, no penalties, yes assistance	Legal mandate, conflicts resolved, penalties enforced, yes assistance

3.2   Human and material resources are adequate for the task

3.2.1 Staff, financial, and computing resources are commensurate with statistical programs of the education data agency.

The issue of resources is central to data quality. Now that computing power is relatively inexpensive, the issue of staff training and staff quality become more pressing. As a corollary, the budget assigned to education statistics becomes a policy issue, since it should be sufficient to pay good staff adequately and provide them with sufficient resources to comply with the requirements of high quality data. In this regard, this section may have to be revisited at the end of the assessment exercise since it is logical that the identified needs for improving data quality will have implications for financial and other resources.

To facilitate answering this question it can be useful to examine the following topics:

a.   Staff resources are adequate to perform required tasks.
   - Overall, the number of the staff is adequate to perform the required tasks.
   - The qualifications of the staff are adequate and they are given continuous on-the-job training to comply with international statistical standards.
   - Staff retention is a priority of agency management.

b.   Computing resources for compiling statistics are adequate to perform required tasks.
   - Software are continually updated and well adapted to perform existing and emerging tasks.
   - Hardware installation is distributed adequately to ensure efficient processing of data and management of the databases.
   - Hardware and software security issues are adequate to ensure compliance.

c.   Financial resources are adequate to perform required tasks.
   - Overall, financial resources are adequate to perform required tasks and commensurate with the overall resources available within the education sector.
   - There is a projection of future budgetary needs derived from an action plan.

Indicator 0.5	Choose one response in the response matrix and clarify with comments whenever necessary				
	0	**0.25**	**0.5**	**0.75**	**1.0**
Staff, facilities, computing resources, and financing are commensurate with the activities	Short on staff, short on computers, no training, no server and outdated software	Staff insufficient, training required, 75% of computers and software and storage need updating	Staff is sufficient but training required, 50% of computers and software need updating, but storage is adequate	Staff is sufficient, training is required, 25% of computers need updating but software and storage are adequate	Staff is sufficient, good training, enough computers & storage, updated software

3.2.2   Processes and procedures are in place to ensure that resources are used efficiently.

This question is very important because it gives a quick diagnostic of the agency. As a result, the bullet points below should help determine the scoring as well as future courses of action.
   - Managers in the education statistics agency promote a policy vision and a direction that is shared with the staff.
   - Efficiency is enforced by ensuring consistency in concepts, definitions and methodologies across the different units and agencies dealing with education statistics.
   - Data collection instruments are carefully designed to avoid duplication of information and lengthy processes in compiling data.
   - Data compilation procedures are managed to minimize processing errors such as coding, editing, and tabulation errors.
   - Periodic reviews of working processes are undertaken to ensure that they are improved upon.
   - The data producing agency strives to make the best use of newly emerging opportunities, such as computing technology for data processing/dissemination, to increase the efficiency of resource use.

Indicator 0.6	Choose one response in the response matrix and clarify with comments whenever necessary				
	0	**0.25**	**0.5**	**0.75**	**1.0**
Processes and procedures are in place to ensure that resources are used efficiently	Management disorganized, untrained, and inefficient: Data management and processes highly inefficient	Management of human and physical resources is inefficient; Technical data processes with duplications and errors	Management of human and physical resources is inefficient; there is no monitoring of resource use but data management procedures just need improvement	Efficient management and monitoring of physical resources, but improvements needed in human resource management. Data management procedures in place	Efficient management of human and physical resources, good monitoring of resource use, and data management procedures in place

3.2.3 Education statistics meet user needs and those needs are monitored continuously

The issue of accountability is related to this item, since to be accountable the education sector has to produce statistical information that is compatible with the information needs of parents and Government. As parents and society require better quality in education, their information needs also change, such as the inclusion of standardized test scores and the reporting of educational expenditures by households. Hence, monitoring user needs and producing the corresponding statistics is essential.

- There is a regular dialogue within the education ministry between staff responsible for statistics and those responsible for policy on statistical information needs, the work plan to meet those needs, and the resources needed to meet the new demand.
- An established process of review takes place periodically to assess whether the program meets the needs of users outside of government.
- The data producing agency regularly participates in international statistical meetings and seminars organized by international and regional organizations to inform about data provision in other countries.

Indicator 0.7	Choose one response in the response matrix and clarify with comments whenever necessary				
	0	**0.25**	**0.5**	**0.75**	**1.0**
Education statistics meet user needs and those needs are monitored continuously	No user consultation, no user feedback, no int'l participation	Some user consultation but no feedback, no int'l participation	User consultation, some feedback, no int'l participation	User consultation, some user feedback, some int'l participation	Users are consulted in the design of statistics to be produced, there is user feedback; participation in int'l meetings

3.2.4   Processes are in place to focus on data quality, on the monitoring the quality of the collection, processing and dissemination of education statistics, and on the inclusion of data quality in statistical planning

Although it may sound repetitious, data quality improvements depend a great deal on the consideration of data quality as an overarching goal of the agency in charge of education statistics. If the agency is obsessed with data quality it should reflect that obsession in the implementation of processes and procedures that produce quality data.

- Agency management is sensitive to all dimensions of data quality: integrity, methodological soundness, accuracy and reliability, serviceability, and accessibility.
- The agency has implemented processes or activities that focus on quality (e.g., Total Quality Management, ISO 9000, and external audits such as DQAF).

Indicator 0.8	Choose one response in the response matrix and clarify with comments whenever necessary				
	0	0.25	0.5	0.75	1.0
Processes are in place to focus on quality	No quality awareness in place	Mgmt. promotes ad hoc quality improvement measures	Mgmt. clearly committed to improving quality	Quality is a main objective of operating plan	Quality procedures in place and enforced by mgmt.

3.2.5   Processes are in place to monitor the quality of the collection, processing, and dissemination of statistics.

- Reviews—such as DQAF—are undertaken to identify problems at the various stages of collecting, processing, and disseminating data.
- There is another agency in Government that provides guidance on the quality of statistics and on strategies for improving data production.
- Systematic processes exist to obtain feedback from users on data quality issues.

Indicator 0.9	Choose one response in the response matrix and clarify with comments whenever necessary				
	0	0.25	0.5	0.75	1.0
Processes are in place to monitor the quality of data processes	No Formal reviews; No external reviews; no user feedback on quality	Formal reviews every 10 yrs; no external reviews; user feedback on quality every 10 yrs	Formal reviews every 5 yrs; external reviews every 10 yrs.; user feedback on quality every 5 yrs	Formal reviews every 3 yrs; external reviews every 5 yrs.; user feedback on quality every 3 yrs	Annual Formal reviews; external reviews every 3 yrs; annual user feedback on quality

3.2.6   Processes are in place to deal with quality considerations in planning the statistical program.

- Agency management knows the tradeoffs among the dimensions of quality (for example between timeliness, completeness and accuracy/reliability).
- The tradeoffs among the dimensions of quality are discussed with users and their views are taken into consideration.
- Decisions on the tradeoffs are explicitly included in the data quality improvement program.

Indicator 0.10	Choose one response in the response matrix and clarify with comments whenever necessary				
	0	**0.25**	**0.5**	**0.75**	**1.0**
Processes are in place to deal with quality considerations in planning the stat program	There is no awareness of tradeoffs	There is awareness about tradeoffs but no tradeoff analysis are conducted	Tradeoff analysis conducted in ad hoc manner	Tradeoff analysis conducted occasionally for preserving coverage	Tradeoff analysis conducted regularly for preserving accuracy and reliability

3.2.7 Mechanisms exist for addressing new and emerging data requirements

- Meetings are periodically held with stakeholders and other data users to review the existing portfolio of education statistics and reports to identify any emerging data requirements.
- Users' feedback on the statistical series and statistical reports are encouraged.

Indicator 0.11	Choose one response in the response matrix and clarify with comments whenever necessary				
	0	**0.25**	**0.5**	**0.75**	**1.0**
Mechanisms exist for addressing new and emerging data requirements	No meetings, no feedback	Meetings with stakeholders every 5 years and no formal instruments for feedback applied	Meetings with stakeholders every 5 years and formal instruments for feedback applied	Meetings with stakeholders every 3 years and formal instruments for feedback applied	Annual meeting with stakeholders and formal instruments for feedback applied

3.3   Assessing the Integrity of Education Statistics

The issue of integrity in educational data and in educational statistics is important for the internal wellbeing of the agency, but it also has a strong political impact because the belief in data integrity is paramount for trust in the general public, and for political accountability in education. If the public perceives that education data is compromised by politics and, therefore, not believable, political support for education reform or for public education in general is likely to be thin. In addition, regaining the public trust can take many years, making it difficult for the agency in charge of education statistics to get the resources it needs to do its job properly.

This section addresses the issue of professionalism, objectivity, transparency, and ethical standards in the operation of the EMIS in general and of the agency in charge of educational statistics in particular. In this regard, integrity in educational data refers to the extent to which educational statistics and their reports reflect the values, beliefs and principles that the Government claims to hold. A discrepancy between the stated values of objectivity, professionalism, transparency, and ethics would violate the integrity of educational data.

3.3.1 Statistical policies and practices are guided by professional principles

The term *professionalism* refers to the ability of statistical staff to exercise their profession with technical independence and without outside interference that could result in the violation of the public trust in statistics and in the institution.

3.3.1.1 Statistics are impartial. Impartiality is assured because the terms and conditions under which educational statistics are produced guarantee the professional independence of the agency.
- There is a law or a formal provision that spells out the professional independence of the agency by prohibiting interference from others—including other government agencies—in the collection, processing, reporting and dissemination of education statistics.
- Professional staff is protected by a code of professional ethics and this code is supported by the Ministry of Education and/or the national statistical agency.

	Choose one response in the response matrix and clarify with comments whenever necessary				
Indicator 1.1	**0**	**0.25**	**0.5**	**0.75**	**1.0**
Statistics are produced on an impartial basis	There is no law protecting the professional independence of the data producing institution	There are informal mechanisms available for protecting professionalism of data producing institution	There is a law protecting professionalism but it is not enforced	There is a law protecting professionalism but is outdated and/or enforced unevenly	A law is in force protecting the professional independence of the data producing institution

3.3.1.2 Professionalism is actively promoted and supported within the data-producing agency.
- Professional competency plays a key role in recruitment and promotion practices.
- Professionalism is promoted by the publication of methodological papers and by encouraging participation conferences and meetings with other professional groups.
- Research and analysis undertaken by the data-producing agency for publication are subject to internal review and other processes to maintain the agency's reputation for professionalism.

	Choose one response in the response matrix and clarify with comments whenever necessary				
Indicator 1.2	**0**	**0.25**	**0.5**	**0.75**	**1.0**
Professionalism of staff is actively promoted	Professionalism of staff is ignored	Professional credentials considered for recruitment and promotion only sporadically	Professional credentials are considered for recruitment and promotion	Professional credentials are considered for recruitment and promotion and staff are encouraged to publish	Professional credentials are considered for recruitment and promotion and staff are encouraged to publish. There is a peer review process in place

3.3.1.3 Choices of sources and statistical techniques as well as decisions about disseminations are informed solely by statistical considerations

- Choosing source data (e.g. administrative from school census; data from household surveys, or population census) and statistical techniques (e.g., processing and validation techniques) is based solely on statistical considerations.
- The choice process is driven by technical reasons and the method used is publicly documented.

Indicator 1.3	Choose one response in the response matrix and clarify with comments whenever necessary				
	0	**0.25**	**0.5**	**0.75**	**1.0**
Choices of data sources and statistical techniques are made solely by statistical considerations	Choice of data sources are arbitrary and staff do not use technical criteria	Choice of data sources are technically justified; staff can use technical criteria, but they are not made public	Choice of data sources are technically justified only sometimes; staff are encouraged to enforce technical criteria on an ad hoc basis and not publicly	Choice of data sources are technically justified; staff are encouraged to enforce technical criteria but not publicly	Choice of data sources are technically justified; staff are encouraged to enforce technical criteria and publish those criteria

3.3.1.4 The appropriate statistical entity is entitled to comment on erroneous interpretation and misuse of statistics.

- The agency producing education statistics maintains the public trust by commenting publicly on erroneous interpretations or misuse of education statistics
- The agency seeks to prevent misinterpretation or misuse of education statistics by providing explanatory materials and briefings to the public

Indicator 1.4	Choose one response in the response matrix and clarify with comments whenever necessary				
	0	**0.25**	**0.5**	**0.75**	**1.0**
Agency is entitled to comment on erroneous interpretation and misuse of statistics	Agency never comments on errors or misinterpretations or provides technical explanations in public	Agency comments publicly only on technical errors but not on misinterpretations and does not provide technical explanations	Agency comments only on technical errors and provides technical explanations but does not act on misinterpretations	Agency comments publicly on technical errors, provides technical explanations and comments on misinterpretations only under pressure	Agency comments publicly on technical errors, provides technical explanations and comments on misinterpretations on a routine basis

3.3.2 Statistical policies and practices are transparent

3.3.2.1 The terms and conditions under which statistics are collected, processed, and disseminated are available to the public.

- Information is available to the public about the terms and conditions under which educational statistics are collected, compiled, and disseminated, the confidentiality of individual responses, and the security measures taken for storing individual data.

- Statistical publications identify where more information about the agency and its products can be found.

Indicator 1.5	Choose one response in the response matrix and clarify with comments whenever necessary				
	0	0.25	0.5	0.75	1.0
Terms and conditions are available to the public	Terms and conditions and additional information not released	Terms and conditions and additional information are difficult to find, although they are available on request.	Terms and conditions and additional information are difficult to find, although they are available.	Terms and conditions and links to additional information are available online only.	Terms and conditions are clearly available; links to additional information, are clear and open in print and online

3.3.2.2 Internal governmental access to statistics prior to their release is publicly identified.

Sometimes statistical results are first available internally among government institutions. The main reason for these internal releases may be for internal efficiency, where other government offices need the information to produce their own statistical series, and sometimes there are reasons of coordination in the dates for statistical releases. Such internal availability is fine as long as data integrity is not compromised. Still, the public must be aware of the practice.

- Access to statistics prior to release is made public in terms of who has access, and at what point of the compilation process access is given.
- The approval processes for the publication of education statistics continues to be the responsibility of the agency in charge of education statistics.

Indicator 1.6	Choose one response in the response matrix and clarify with comments whenever necessary				
	0	0.25	0.5	0.75	1.0
Public is aware of internal governmental access to statistics prior to their release	No information given about internal access to preliminary data	Information on internal access given upon request	Some information on internal access to preliminary data is publicly available	All information about internal access to preliminary data given upon request.	Information about internal access to preliminary data is openly available

3.3.2.3 Products of statistical agencies/units are clearly identified as such.
- Data released to the public are clearly identified as a product of the agency in charge of education statistics (e.g., by name, logo, and insignia).
- In the case of joint publications, the part attributable to the agency is identified.
- The agency requests attribution when its statistics are used or reproduced.

	Choose one response in the response matrix and clarify with comments whenever necessary				
Indicator 1.7	**0**	**0.25**	**0.5**	**0.75**	**1.0**
Products of education statistics agency are clearly identified	There is no attribution to any institution in the statistical publications	Attribution given only to the Ministry of Education and no requests are made for attribution from others	Attribution is given to the Ministry of Education and other entities in the publication, but no requests for attribution from others	Attribution given to the agency, to others, but no requests for attribution from others enforced	Statistical unit is clearly identified as the source of data, clearly identifies collaborating institutions, and attribution is requested from other users

3.3.2.4 Advance notice is given of major changes in methodology, source data, and statistical techniques.
- Users of education statistics are made aware in advance of major changes in methodology, source data, and statistical techniques.

	Choose one response in the response matrix and clarify with comments whenever necessary				
Indicator 1.8	**0**	**0.25**	**0.5**	**0.75**	**1.0**
Advance notice is given of major changes in methodology, source data, and statistical techniques	No notices are given on any changes in methodology, source data and stat techniques	Agency sends notice of major changes in methods, sources and techniques only upon request	Agency sends notice of major changes in methods, sources and techniques only to selected institutions	Agency gives notice of major changes in methods, sources and techniques several months after making the changes	Agency sends notice of major changes in methods, sources and techniques as soon as the decision is made

3.3.3   Policies and practices in education statistics are guided by ethical standards

Ethical standards—in an intuitive form—are those principles that the general public uses to differentiate right from wrong. Following this reasoning, the application of ethical standards to the agency in charge of education statistics implies that the agency follows clear standards of good conduct and that those standards are defined for its staff and the general public.

3.3.3.1 Guidelines for staff behavior are in place and are well known to the staff.
- There are clear guidelines outlining correct behavior when the agency or its staff is confronted with conflicts of interest.
- There are clear guidelines for connecting ethical behavior with staff work. Examples of this clause can be the use and misuse of statistics, the use of public property to conduct private business, or the alteration of statistics in exchange for money.
- The reputation of the agency and its management is tied to compliance of ethical standards.

Indicator 1.9	Choose one response in the response matrix and clarify with comments whenever necessary				
	0	**0.25**	**0.5**	**0.75**	**1.0**
Guidelines for staff behavior are in place and are well known to the staff	Guidelines for staff behavior are non-existent	Guidelines for staff behavior are vague and not communicated to staff	Guidelines for staff behavior are in place but not communicated to the staff	Guidelines for staff behavior are in place and are well known to the staff	Guidelines for staff behavior are in place, are well known to the staff and actively enforced

3.4   Methodological soundness

The methodological basis for educational statistics should follow internationally accepted standards, guidelines and good practices. Methodological soundness may be assessed on the basis of a hybrid of internationally accepted standards, guidelines and good practices, including, but not limited to:

- UNESCO's International Standard Classification of Education 97 (www.uis.unesco.org)
- UNESCO Institute for Statistics (UIS) technical guidelines and manuals
- Methodology used by UIS in the 1994 estimation and projection of adult illiteracy
- Indicators developed by UIS and for OECD for countries participating in the World Education Indicators (WEI) program
- UIS Guide to the Analysis and Use of Household Survey and Census Education Data
- The National Center for Education Statistics' Statistical Standards http://nces.ed.gov/statprog/2002/stdtoc.asp
- United Nation System of National Accounts (http://unstats.un.org/unsd/sna1993/introduction.asp)

3.4.1 Concepts and definitions are in accord with standard statistical frameworks.
- The concepts and definitions follow methodologies recommended by UIS.

Indicator 2.1	Choose one response in the response matrix and clarify with comments whenever necessary				
	0	**0.25**	**0.5**	**0.75**	**1.0**
Overall structure, concepts and definitions follow regionally and internationally accepted standards, guidelines, and good practices	Structure, concepts and definitions are inconsistent from year to year, without proper documentation, and without consistency with regional or international standards	Structure, concepts and definitions do not have proper documentation and may or may not consistent with regional and international standards	Structure, concepts and some definitions have proper documentation and may or may not be consistent with regional and international standards	Structure, concepts and definitions have proper documentation but definitions do not conform with regional and international standards	Overall structure, concepts and definitions follow regionally and internationally accepted standards, guidelines, and good practices

3.4.2   Scope of education statistics are in accordance with international standards, guidelines or good practices
- Education statistics are sufficiently comprehensive in scope and conceptual development to adequately describe the full performance of the education sector.
- Scope of statistics is adequate in terms of other relevant variables for analytical purposes.

	Choose one response in the response matrix and clarify with comments whenever necessary				
Indicator 2.2	**0**	**0.25**	**0.5**	**0.75**	**1.0**
Scope is in accordance with international standards, guidelines, or good practices	Scope of agency statistics covers less than 50% of UIS indicators	Scope of agency statistics covers 50-70% of UIS indicators	Scope of agency statistics covers 71-90% of UIS indicators	Scope of agency statistics covers 91-100% of UIS indicators	100% of OECD indicators are produced by the Agency

3.4.3 Classification systems used are broadly consistent with internationally accepted standards, guidelines, or good practices

In general, countries define their own education systems but many of them also generate maps that align their own nomenclature with the International Standard Classification of Education (ISCED97) (http://www.unesco.org/education/information/nfsunesco/doc/isced_1997.htm)

- Classification of education is based on UIS' ISCED97 and technical guidelines and manuals (e.g., level of education, public and private, trained and untrained, full-time and part-time, trained and untrained).
- Classification of educational expenditure is based on UIS technical guidelines as well as the United Nations System of National Accounts (SNA).
- ISCED and other UIS standards and guidelines are applied consistently to statistics on the educational system, students, teachers and educational institutions, and educational expenditure.

	Choose one response in the response matrix and clarify with comments whenever necessary				
Indicator 2.3	**0**	**0.25**	**0.5**	**0.75**	**1.0**
Classification systems are consistent with international standards, guidelines, or good practices	ISCED standard is not applied	Classification is in process	Classification systems are broadly consistent with international standards, guidelines, or good practices except for students, teachers, and expenditures	Classification systems are broadly consistent with internationally accepted standards, guidelines, or good practices except for expenditures	Classification systems are completely consistent with internationally accepted standards, guidelines, or good practices

3.5   Accuracy and reliability of education statistics

The assessment of accuracy and reliability in source data ensures that s*ource data and statistical techniques are sound and that statistical outputs sufficiently portray reality.* This section examines the accuracy and reliability of source data. The term *source data* refers to data produced by agencies or institutions other than the agency responsible for education statistics. Generally most of the data processed by the agency in charge of educational statistics is source data, since they are generated by schools and other Government agencies.

3.5.1 Source data are obtained from comprehensive data collection programs that take into account country-specific conditions.
- Statistics should describe the structure and normative characteristics of the education system, aligning it as much as possible with the ISCED97 standards.
- Statistics on enrollment and education resources are collected through a regular administrative school census program.
- Administrative school census should collect information on the structure of educational system, students, teachers, and educational expenditure.
- Statistics on the demand for education collected through household surveys and population censuses.
- Statistics on the quality of learning outcomes collected through assessments of student achievement.
- Statistics on the environment within schools that impact on quality of education collected via school surveys.

The response matrix for this question is somewhat different than the others. The right hand cell lists all the different items in a comprehensive data set of the education system. Scoring is done by subtraction, that is, if the source data has the five elements listed in the right-hand cell, then the score is 1.0. If the source data only has four of the five elements, the score is 0.75; if it has three of the five elements the score is 0.5; if it has only two of the five elements the score is 0.25 and if it has only one the score is 0.

	Choose one response in the response matrix and clarify with comments whenever necessary				
Indicator 3.1	**0**	**0.25**	**0.5**	**0.75**	**1.0**
Source Data are obtained from comprehensive data collection that takes into account country-specific conditions. **Score absent conditions in descending order. Explain in the comments**.					Source data includes (1) system structure; (2) regular census on enrolment, teachers, school and education finances; (3) education demand via HH surveys, (4) learning outcomes, and (5) school characteristics that impact education quality

3.5.2 Source data reasonably approximate the definitions, scope, classifications, valuation, and time of recording required.

This question refers to the compatibility between education statistics to be produced by the Ministry of Education and the data produced by its sources of data. It should be clear that the more compatible and consistent are the source data with the statistics required by the education system, the lower the probability of error and the higher the probability of having education statistics of good quality.
- Source data are consistent with the definitions, scope, and classifications of education statistics.
- Source data are consistent with the time of recording, reference periods, and valuation of education statistics.
- Data compilers are aware of differences in concepts and definitions used in the source data from those required of education statistics.

The response matrix for this question is also somewhat different than the others. The right hand cell lists different items and scoring is done by subtraction, that is, if the source data has the five elements listed in

the right-hand cell, then the score is 1.0. If the source data only has four of the five elements, the score is 0.75; if it has three of the five elements the score is 0.5; if it has only two of the five elements the score is 0.25 and if it has only one the score is 0.

	Choose one response in the response matrix and clarify with comments whenever necessary				
Indicator 3.2	**0**	**0.25**	**0.5**	**0.75**	**1.0**
Data are reasonably confined to the definitions, scope, classifications, and time of recording required. **Score absent conditions in descending order. Explain in the comments.**					All Source data should comply with the standards and scope of education statistics data; there are procedures to update and standardize source data as needed; data compilers are aware of inter-source differences; proper referencing is done for documenting different source data

3.5.3   Source data are timely.

- Data collection system provides for the timely receipt of source data.
- Source data providers are aware of the deadlines set for the reporting of education statistics.
- The education statistics agency employs systematic follow-up procedures to ensure the timely receipt of source data.
- Source data from the school census on enrolments and teachers are provided to the area responsible for producing statistics no later than 6 months after the end of the school year.
- Source data on educational expenditures are collected from within the ministry of education and other ministries and institutions no later than 6 months after the end of the school year.

	Choose one response in the response matrix and clarify with comments whenever necessary				
Indicator 3.3	**0**	**0.25**	**0.5**	**0.75**	**1.0**
Source Data are timely (6 months after event)	Ad hoc or sporadic data exchange between education statistics and source data providers	Source data agencies are compliant with deadline needs of education statistics	Source data agencies are compliant with deadline needs of education statistics; education data are provided more than six months after the end of the school year to other source providers	Source data agencies are compliant with deadline needs of education statistics; there are follow up procedures for ensuring compliance; education data are provided more than six months after the end of the school year to other source providers	Source data agencies are compliant with deadline needs of education statistics; there are follow up procedures for ensuring compliance; education data is provided within six months after the end of the school year to other source providers

3.5.4   Source data – including censuses, sample surveys and administrative records— are routinely assessed for coverage, sample error, response error, and non-sampling error; the results of the assessments are monitored and corrections to education statistics methods are made and published.

- Administrative and survey data are audited to check the *accuracy* of source data (e.g., inspection of field collections, random post-enumeration checks).
- Accuracy of data from all sources used to compile statistics is routinely assessed in terms of monitored events, population coverage, and the time frames.
- Information is compiled on coverage, sampling errors (where applicable), non-response errors (e.g., non-response rates for various socioeconomic groups), and the percentage of missing and/or imputed data by methods of imputation.
- For surveys, sampling standard errors of survey estimates are provided in order to form confidence intervals for population values, especially when the estimates are based on a small sample.
- For surveys, sample selection is adjusted when sampling errors become large.
- Relating to administrative data
    - The use of school registers is promoted and the accuracy of school registers is periodically assessed (i) Students dropping out are removed from the register or identified as no longer enrolled; (ii) Students moving or changing schools are removed from the register or identified as no longer enrolled; (iii) The register includes all students currently enrolled.

	Choose one response in the response matrix and clarify with comments whenever necessary				
Indicator 3.4	**0**	**0.25**	**0.5**	**0.75**	**1.0**
Other data sources, such as censuses, surveys, and administrative records, are routinely assessed	Source data are not audited; information on sampling errors and imputed data are not documented or unavailable	Source data are rarely audited; information on sampling errors and imputed data are not documented or unavailable	Source data are routinely audited; information on sampling errors and imputed data are rarely documented or shared.	Source data are routinely audited; information on sampling errors and imputed data are documented and shared.	Source data are routinely audited; information on sampling errors and imputed data are documented and statistics staff are trained to handle these issues.

3.5.5   Data compilation employs sound statistical techniques to deal with data sources

- Data compilation procedures minimize processing errors such as tabulation errors and report generation.
- The report forms allow for easy completion of the forms and are appropriate for computer processing. Forms have also been pilot-tested with a sample of respondents.
- Considerations relating to surveys:
    - Target population is defined.
    - Sample frames are available for conducting surveys of statistical units (e.g., individual, household, community), minimize undercoverage and overcoverage, and are updated regularly.
    - Scientific random sampling techniques are used.
    - Sample size is appropriate.
- Considerations relating to administrative data:
    - Enrollment data are collected through a school census.

▫ A register of all schools exists, and is used to identify responding and non-responding schools.
▫ The register covers all schools, with separate identification of public and private schools.
▫ In expenditure data, intergovernmental transfers (from one ministry to another or from one level of government to another) are netted out and counted only at the level where actual expenditure occurs.
▫ Institutions and programs for which education expenditure data are reported are the same as those for which staff and enrollment data are reported. If this is not the case, data are provided separately on number of full-time-equivalent (FTP) students and staff in institutions and programs covered by the expenditure data.

The response matrix for this question is somewhat different than the others. The right hand cell lists all the different items in a comprehensive data set of the education system. Scoring is done by subtraction, that is, if the source data has the five elements listed in the right-hand cell, then the score is 1.0. If the source data only has four of the five elements, the score is 0.75; if it has three of the five elements the score is 0.5; if it has only two of the five elements the score is 0.25 and if it has only one the score is 0.

Indicator 3.5	Choose one response in the response matrix and clarify with comments whenever necessary				
	0	0.25	0.5	0.75	1.0
Data compilation employs sound statistical techniques to deal with data sources. **Score absent conditions in descending order. Explain in the comments.**					For survey data: Random sampling; appropriate sample size. For census data: updated registry of all schools (public, private) exists to identify responding and non-responding schools

3.5.6 Other statistical procedures employ sound statistical techniques

- Imputation methods, estimation techniques (e.g., sampling weights, calibration weights), employ sound statistical techniques.
- Problems regarding non-responses, recall errors, reporting errors, respondents effects, interviewer effects, and inappropriate instrument design are addressed.
- Imputation and estimation methods are appropriate for dealing with missing data from administrative records, household surveys and population censuses, sample survey or schools, and assessments of student achievement.
  o Proper imputation methods are used wherever feasible to handle missing, invalid or inconsistent responses. If there is a sizeable part of the population that is not covered by sources used for regular compilation of statistics, under-coverage adjustments are made, or if such adjustments are not feasible in terms of being statistically defensible, the limitation in the coverage of the statistics is described.
- Where compensation for missing data is not feasible (e.g., if data is not collected from private schools) the nature of the missing data is described.

Indicator 3.6	Choose one response in the response matrix and clarify with comments whenever necessary				
	0	**0.25**	**0.5**	**0.75**	**1.0**
Other statistical procedures (data editing, transformations and analysis) employ sound statistical techniques	No data adjustments made when needed	Some data adjustments and transformations made but not documented	Data adjustments and transformations made but not documented; statistical methods used in data transformation not to international standards	Data adjustments and transformations made but not documented; sound statistical methods used in data transformation	Data adjustments and transformations documented; sound statistical methods used in data transformation

3.5.7 Assessment and validation of intermediate data and statistical outputs: Intermediate results are validated against other information where applicable.
- Data from different sources but measuring the same or closely related phenomena are compared against each other.

Indicator 3.7	Choose one response in the response matrix and clarify with comments whenever necessary				
	0	**0.25**	**0.5**	**0.75**	**1.0**
Intermediate results are validated against other information where applicable	Intermediate results are not validated against other information where applicable	Intermediate results are rarely validated against other information where applicable	Intermediate results are sometimes validated against other information where applicable	Intermediate results are validated most of the time against other information where applicable	Intermediate results are always validated against other information where applicable

3.5.8 Statistical discrepancies in intermediate data are assessed and investigated
- Post-survey data analysis is conducted to monitor statistical discrepancies.
- Provision is made for immediate follow-up to reconcile data inconsistencies.

Indicator 3.8	Choose one response in the response matrix and clarify with comments whenever necessary				
	0	**0.25**	**0.5**	**0.75**	**1.0**
Statistical discrepancies in intermediate data are assessed and investigated	Statistical discrepancies in intermediate data are not assessed and investigated	Statistical discrepancies in intermediate data are rarely assessed and investigated	Statistical discrepancies in intermediate data are assessed and investigated sometimes	Statistical discrepancies in intermediate data are assessed and investigated most of the time	Statistical discrepancies in intermediate data are always assessed and investigated

3.5.9 Statistical discrepancies and other potential indicators of problems in statistical outputs are investigated
- Systematic processes are in place to monitor errors and omissions and address data problems.
- Results are checked against demographic data and other survey/census results.
- Data are compared with data from earlier years to examine reasonableness of year-to-year changes and trends.

	Choose one response in the response matrix and clarify with comments whenever necessary				
Indicator 3.9	**0**	**0.25**	**0.5**	**0.75**	**1.0**
Statistical discrepancies and other potential indicators or problems in statistical outputs are investigated	There are no systematic processes (check demographic data; check previous years) in place for monitoring errors and omissions	There are systematic processes (check demographic data; check previous years) in place for monitoring errors and omissions but they are rarely used	There are systematic processes (check demographic data; check previous years) in place for monitoring errors and omissions but they are not applied consistently	There are systematic processes (check demographic data; check previous years) in place for monitoring errors and omissions but results are not made public	There are systematic processes (check demographic data; check previous years) in place for monitoring errors and omissions and the results are made public

3.5.10 Studies and analyses of revisions are carried out routinely and used to inform statistical processes

- Revisions to methodology are assessed regularly.
- Analysis of preliminary versus revised data is conducted for major data series to assess the reliability of the preliminary data and findings are taken into account.
- Revision findings are made accessible to the data users and compilers.

	Choose one response in the response matrix and clarify with comments whenever necessary				
Indicator 3.10	**0**	**0.25**	**0.5**	**0.75**	**1.0**
Studies and analyses of revisions are carried out routinely and used internally to inform the processes	Revisions to methodology are rarely or never made	Methods are reviewed; No assessments of preliminary vs. revised data are made.	Methods are reviewed; preliminary vs. revised data are assessed; no feedback loop implemented; findings are not made public	Methods are reviewed; preliminary vs. revised data are assessed; feedback loop implemented; findings are not made public	Methods are reviewed; preliminary vs. revised data are assessed; feedback loop implemented; findings are made public

3.6   Serviceability

This section assesses the relevance, timelines, and consistency of education statistics, as well as the revision policies associated with these issues.

3.6.1   Periodicity and timeliness: Periodicity follows dissemination standards
- Education statistics derived from the administrative school census are disseminated annually.
- The periodicity of other education statistics follows internationally accepted good practices.

Indicator 4.1	Choose one response in the response matrix and clarify with comments whenever necessary				
	0	**0.25**	**0.5**	**0.75**	**1.0**
Periodicity follows dissemination standards	Census of enrolment, teachers, schools and financial data are only produced every 5 or more years.	Census of enrolment, teachers, schools and financial data are produced every 2-5 yrs.	Census of enrolment, teachers, schools and financial data are produced every 2 years.	Census of enrolment is annual but census of teachers, schools and finances are not produced annually.	Census of enrolment, teachers, schools and financial data are produced annually

3.6.2 The timeliness of statistics follows internationally accepted good practices
- Statistics derived from the administrative school census are disseminated within 6-12 months after the beginning of school year.
- The timeliness of other education statistics follow internationally accepted good practices.

Indicator 4.2	Choose one response in the response matrix and clarify with comments whenever necessary				
	0	**0.25**	**0.5**	**0.75**	**1.0**
Timeliness follows international dissemination standards	Administrative school census data are available 6-12 months after the end of the school year	Administrative school census data are available 0-6 months after the end of the school year	Administrative school census data are available 6-12 months after the initiation of the school year	Administrative school census data are available 2-6 months after the initiation of the school year	Administrative school census data are available 2 months after the initiation of the school year

3.6.3   Consistency: Statistics are consistent within the dataset

Consistency is measured in a simple way: the total reported should also be obtained by adding the components of such total.
- Accounting identities between aggregates and their components are observed for all involved data.
- Accounting identities between enrollments, repeaters, dropouts, and demographic data are observed.
- Statistics are crosschecked within the survey, across geographic areas and sub-groups of population.

Indicator 4.3	Choose one response in the response matrix and clarify with comments whenever necessary				
	0	**0.25**	**0.5**	**0.75**	**1.0**
Statistics are consistent within the dataset	No consistency or cross checking done on the data	Consistency checking done only for enrolment data and there is no cross-checking	Consistency checking done only for enrolment data and cross-checking done regularly	Consistency checking done only for administrative census data and cross-checking done regularly	Consistency checking done for all data and cross-checking done regularly

3.6.4   Statistics are consistent or reconcilable over a reasonable period of time
- Consistent time series data are available for an adequate period of time (at least five years).
- When changes in source data, methodology, and statistical techniques are introduced, historical series are reconstructed as far back as reasonably possible.

- Detailed methodological notes identify and explain the main breaks and discontinuities in time series, their causes, as well as adjustments made to maintain consistency over time.
- Any unusual changes in economic and demographic trends are explained in the analytical text included in the publication and in the database accessible to users.

	Choose one response in the response matrix and clarify with comments whenever necessary				
Indicator 4.4	**0**	**0.25**	**0.5**	**0.75**	**1.0**
Statistics are consistent or reconcilable over a reasonable period of time	Time series are available for less than 5 years; there are no procedures for revision of time series	Time series are available for less than 5 years; there are procedures for revision of time series; the revision methods are not public, and inconsistencies are not explained	Time series are available for more than 5-10 years; there are procedures for revision of time series; the revision methods are not public, and inconsistencies are not explained	Time series are available for 5-10 years; there are procedures for revision of time series; the revision methods are public, and inconsistencies are explained	Time series are available for more than 10 years; there are procedures for revision of time series; the revision methods are public, and inconsistencies are explained

3.6.5 Statistics are consistent or reconcilable with those obtained through other data sources and/or statistical frameworks

- Education statistics are reasonably reconciled with administrative data, census data, and socio-demographic data from other sources.

	Choose one response in the response matrix and clarify with comments whenever necessary				
Indicator 4.5	**0**	**0.25**	**0.5**	**0.75**	**1.0**
Statistics are consistent or reconcilable with those obtained through other data sources and/or statistical frameworks	Percent difference in primary and secondary education enrollment between school-reported figures and data from HH surveys is larger than 30 percent points.	Percent difference in primary and secondary education enrollment between school-reported figures and data from HH surveys is between 21-30 percent points.	Percent difference in primary and secondary education enrollment between school-reported figures and data from HH surveys is between 11-20 percent points.	Percent difference in primary and secondary education enrollment between school-reported figures and data from HH surveys is between 5-10 percent points.	Percent difference in primary and secondary education enrollment between school-reported figures and data from HH surveys is lower than 5 percent points.

3.6.6 Revision policy and practice: Revisions follow a regular, well established, and transparent schedule.

- Adequate documentation of revisions is included in the publication of the statistical series and in the database accessible to users.

	Choose one response in the response matrix and clarify with comments whenever necessary				
Indicator 4.6	**0**	**0.25**	**0.5**	**0.75**	**1.0**
Revisions follow a regular and transparent schedule	There are no revisions	There are ad hoc partial formal revisions of provisional estimates, methods, and outputs. Documentation available to a restricted group	There are annual partial formal revisions of provisional estimates, methods, and outputs. Documentation available to a restricted group	There are documented formal revisions of provisional estimates, methods, and outputs every two years	There are documented annual formal revisions of provisional estimates, methods, and outputs

3.6.7 Preliminary data and/or revised data are clearly identified and revisions are made public
- Users are alerted that initially published data are preliminary and subject to revision.
- The revised data are disseminated with the same level of detail as previously published for the data being revised.
- Revisions to methodology are assessed and explained in the publication of the statistical series and in the database accessible to users.
- Analysis of preliminary versus revised data is published for major data series to allow assessment of the reliability of the preliminary data.

	Choose one response in the response matrix and clarify with comments whenever necessary				
Indicator 4.7	**0**	**0.25**	**0.5**	**0.75**	**1.0**
Preliminary and/or revised data are clearly identified	No preliminary data are produced	Preliminary and/or revised data are not identified	Preliminary and/or revised data are clearly identified but only a portion is made public	Preliminary and/or revised data are clearly identified but not made public	Preliminary and/or revised data are clearly identified in public documents

3.7 Accessibility

This section assesses how education statistics are presented, seeking a system where statistics are shown in a clear and understandable manner, where forms of dissemination are adequate, and statistics are made available on an impartial basis.

3.7.1 Statistics are presented in a way that facilitates proper interpretation and meaningful comparisons (layout and clarity of text, tables, and charts)
- Education data are published in a clear manner; charts and tables are disseminated with the data to facilitate the analysis.
- Education data offer adequate details and time series.
- Analysis of current period estimates is available.
- Data are presented for different degrees of aggregation (e.g. school, region), sub-components (e.g. by gender, by level of education, by age, private and public, full-time and part-time) and additional data (e.g. demographic, socioeconomic, geographic information) is included.

	Choose one response in the response matrix and clarify with comments whenever necessary				
Indicator 5.1	**0**	**0.25**	**0.5**	**0.75**	**1.0**
Statistics are presented to facilitate proper interpretation and comparisons (layout, clarity of texts, tables, and charts)	No presentation of data outputs	Data are not presented clearly	Clear presentation of data; charts have no underlying data available; disaggregation of data are not presented	Clear presentation of data; charts have underlying data available; disaggregation of data are not presented	Clear presentation of data; charts have underlying data available; disaggregation of data are possible

3.7.2 Dissemination media and formats are adequate
- Data are first released via an information release, which is then followed by the release of a more comprehensive publication.
- Recently released data and longer time series can be accessed through an electronic database maintained by the agency producing education statistics.
- Annual education statistical yearbook can be made available and disseminated.

	Choose one response in the response matrix and clarify with comments whenever necessary				
Indicator 5.2	**0**	**0.25**	**0.5**	**0.75**	**1.0**
Dissemination media and format are adequate	During the last 5 years, data were not available electronically and there is no yearbook ready for dissemination	Data are not available electronically but there is a yearbook ready for dissemination	During the last year, data were available electronically and there was a yearbook ready for dissemination	During the last 2-4 years, data were available electronically and there was a yearbook ready for dissemination	During the last 5 years, data were available electronically and there was a yearbook ready for dissemination

3.7.3 Statistics are released on a pre-announced schedule
- Education statistics are released according to a pre-announced schedule.

	Choose one response in the response matrix and clarify with comments whenever necessary				
Indicator 5.3	**0**	**0.25**	**0.5**	**0.75**	**1.0**
Statistics are released on a pre-announced schedule	Data are not released	There is no pre-announced schedule for data release	There is a pre-announced schedule for data release and the data are released >6 months later	There is a pre-announced schedule for data release but the data are released 0-6 months later	There is a pre-announced schedule for data release and the data are released accordingly

3.7.4 Statistics are made available to all users at the same time
- Education statistics are released simultaneously to all users on the date and/or time specified in the pre-announced schedule.
- If the press is briefed in advance, measures are taken to avoid release to the public in advance of the regular schedule.

	Choose one response in the response matrix and clarify with comments whenever necessary				
Indicator 5.4	**0**	**0.25**	**0.5**	**0.75**	**1.0**
Statistics are made available to all users at the same time	No data are released	Some of the data are released to restricted users	Most of the time part of the data are released to all users simultaneously	Most of the time all of the data are released to all users simultaneously	All data are released at the same time to all users

3.7.5 Statistics not routinely disseminated are made available upon request

- Non-published (but non-confidential) specialized tabulations (e.g., sub-aggregates of units of analysis) are made available upon request.
- Non-confidential micro-data files (e.g., with information permitting the identification of individual respondents removed) are available to permit analytical use by researchers and other users.
- The availability of non-published statistics and data, and the terms and conditions on which they are made available are publicized.

	Choose one response in the response matrix and clarify with comments whenever necessary				
Indicator 5.5	**0**	**0.25**	**0.5**	**0.75**	**1.0**
Statistics not routinely disseminated are made available upon request	Release of non-published data may compromise confidentiality	Release of non-published data and non-confidential data is without controls	Release of non-published data and non-confidential data is discretionary	There are procedures in place for releasing non-published data and non-confidential data to a restricted group	There are procedures in place for releasing non-published data and non-confidential data

3.7.6 Metadata accessibility: All metadata documentation is available, and differences from international standards are annotated

- Metadata, including information on concepts, definitions, classification and other methodology, data sources, and statistical techniques are prepared and disseminated to the public.
- Deviations from internationally accepted standards, guidelines, or good practices are well documented in the metadata.
- The metadata is disseminated in a manner that facilitates its access (e.g., websites, statistical publications) and its availability is well publicized.
- Instances where statistical information for the subject area in question make use of data pertaining to other subject areas and produced by other data-producers are noted, and references are given to descriptions of their methodology and quality.

	Choose one response in the response matrix and clarify with comments whenever necessary				
Indicator 5.6	**0**	**0.25**	**0.5**	**0.75**	**1.0**
Documentation on concepts, scope, classifications, basis of recording, data sources, and statistical techniques is available, and differences from internationally accepted standards, guidelines, or good practices are annotated	No metadata is available	Metadata, including information on concepts, definitions, classifications, sources, methodology and statistical techniques is incomplete and outdated	Metadata, including information on concepts, definitions, classifications, sources, methodology and statistical techniques are documented, but outdated and available upon request	Metadata, including information on concepts, definitions, classifications, sources, methodology and statistical techniques are documented, updated and available upon request	Metadata, including information on concepts, definitions, classifications, sources, methodology and statistical techniques are documented, updated and available to public

3.7.7 Levels of detail are adapted to the needs of the intended audience

- A brochure has been prepared to inform general users about the statistical series.
- A comprehensive sources and methods document is produced and updated regularly to inform analysts and other users of statistics about how statistics are compiled.

	Choose one response in the response matrix and clarify with comments whenever necessary				
Indicator 5.7	**0**	**0.25**	**0.5**	**0.75**	**1.0**
Levels of detail are adapted to the needs of the intended users	No data catalog is produced	Data catalog is available to selected users	Data catalog is available so users can request detail of data according to their needs. Catalog is not updated annually but selected users have access to data	Data catalog is available so users can request detail of data according to their needs. Catalog is updated annually but just selected users have access to data	Data catalog is available so users can request detail of data according to their needs. Catalog is updated annually and data is accessible to users

3.7.8 Assistance to users: Contact points for each subject field are publicized

- Prompt and knowledgeable service and support are available to users of statistics. All statistical releases identify specific individuals who may be contacted by mail, telephone, facsimile, or email.
- Documentation has been developed (e.g. brochures) to educate users of related datasets.
- Assistance to users is monitored through periodic surveys of users.

	Choose one response in the response matrix and clarify with comments whenever necessary				
Indicator 5.8	**0**	**0.25**	**0.5**	**0.75**	**1.0**
Contact points for each subject field are publicized	Statistical releases do not identify contact person	Most statistical releases identify contact person in case of required assistance. No data manuals and/or brochures are produce to educate users and assistance to users is not monitored	All statistical releases identify contact person in case of required assistance. Limited and hard to obtain data; Manuals and/or brochures are produced to educate users and assistance to users is not monitored	All statistical releases identify contact person in case of required assistance. Data manuals and/or brochures are produced to educate users and assistance to users is not monitored	All statistical releases identify contact person in case of required assistance. Data manuals and/or brochures are produced to educate users and assistance to users is monitored though periodic surveys

3.7.9 Catalogues of publications, documents, and other services, including information on any charges, are widely available

- A catalogue of publications, documents, and other services to users is available and updated each year.
- The prices of the statistical products and services are clearly disclosed and assistance is provided in placing orders.

	Choose one response in the response matrix and clarify with comments whenever necessary				
Indicator 5.9	**0**	**0.25**	**0.5**	**0.75**	**1.0**
Catalogs of publications and other services, including information on any charges, are widely available	Catalogues of publications and service are not available	Catalogues of publications and services are available but not updated yearly. Prices of statistical products and services are not clearly disclosed	Catalogues of publications and services are available and updated yearly. Prices of statistical products and services are not clearly disclosed	Catalogues of publications and services are available and updated yearly. Prices of statistical products and services are clearly disclosed but assistance for placing orders is not available	Catalogues of publications and services are available and updated yearly. Prices of statistical products and services are clearly disclosed and assistance for placing orders is available

4. Analyzing EMIS using the SABER EMIS Assessment Tool (SEAT)

The analysis of the SABER EMIS Assessment results in the initial stages is mostly descriptive, based on the averages obtained for each of the six Aspects of Quality.

a. The scores for each row of the SEAT are listed by Aspect of Quality in a spreadsheet – the SEAT Scorecard.
b. The average score for each Aspect of Quality is calculated.
c. The average scores for all Aspects of Quality are graphed to obtain a quick assessment of the areas of strength and weakness.

Table 4.1 shows a summary of the scores for an example country. Each row shows the question in the assessment and the score given by the assessor. Rows marked in bold letters with yellow shading are the average score for each Aspect of Quality.

Table 4.1 Example of a Country Score organized with the scores from the response matrix	
Aspect of Quality	**Country Score (Example)**
0 **Prerequisites of quality**	**0.64**
0.1 Responsibility for collecting and disseminating education data is clearly specified	0.75
0.2 Data sharing and coordination among different agencies are adequate	0.50
0.3 Individual/personal data are kept confidential and used for statistical purposes only	1.00
0.4 Statistical reporting is ensured through legal mandate and/or measures to encourage response	0.75
0.5 Staff, facilities, computing resources, and financing are commensurate with the activities	1.00
0.6 Processes and procedures are in place to ensure that resources are used efficiently	0.75
0.7 Education statistics meet user needs and those needs are monitored continuously	0.75
0.8 Processes are in place to focus on quality	0.50
0.9 Processes are in place to monitor the quality of data processes	0.00
0.10 Processes are in place to deal with quality considerations in planning the stat program	0.50
0.11 Processes are in place to deal with quality considerations in planning the stat program	1
1 **Assurances of integrity**	**0.64**
1.1 Statistics are produced on an impartial basis	0.25
1.2 Professionalism of staff is actively promoted	0.50
1.3 Choices of data sources and statistical techniques are made solely by statistical consideration	0.75
1.4 Agency is entitled to comment on erroneous interpretation and misuse of statistics	0.75
1.5 Terms and conditions are available to the public	0.50
1.6 Public is aware of internal governmental access to statistics prior to their release	0.50
1.7 Products of education statics agency are clearly identified	0.75
1.8 Advanced notice is given of major changes in methodology, source data, and statistical techniques	0.75
1.9 Guidelines for staff behavior are in place and are well known to the staff	1.00
2 **Methodological soundness**	**0.75**
2.1 Overall structure, concepts and definitions follows internationally accepted standards, guidelines, or good practices	0.75
2.2 Scope is broadly consistent with internationally accepted standards, guidelines, or good practices	0.50
2.3 Classification systems are broadly consistent with internationally accepted standards, guidelines, or good practices	0.75
3 **Accuracy and reliability**	**0.58**
3.1 Source data are obtained from comprehensive data collection that takes into account country-specific condition	0.75
3.2 Data are reasonably confined to the definitions, scope, classifications, and time of recording required	0.50
3.3 Source data are timely (6 months after event)	0.50
3.4 Other data sources, such as censuses, surveys, and administrative records, are routinely assessed	0.25
3.5 Data compilation employs sound statistical techniques to deal with data sources	0.75
3.6 Other statistical procedures (data editing, transformations, and analysis) employ sound statistical techniques	0.75
3.7 Intermediate results are validated against other information where applicable	0.50
3.8 Statistical discrepancies in intermediate data are assessed and investigated	0.75
3.9 Statistical discrepancies and other potential indicators or problems in statistical outputs are investigated	0.75
3.10 Studies and analyses of revisions are carried out routinely and used internally to inform the processes	0.25
4 **Serviceability**	**0.59**
4.1 Periodicity follows dissemination standards	1.00
4.2 Timeliness follows international dissemination standards	0.50

Table 4.1 Example of a Country Score organized with the scores from the response matrix

Aspect of Quality		Country Score (Example)
4.3	Statistics are consistent within the dataset	0.50
4.4	Statistics are consistent or reconcilable over a reasonable period of time	0.75
4.5	Statistics are consistent or reconcilable with those obtained through other data sources and/or statistical frameworks	0.50
4.6	Revisions follow a regular and transparent schedule	0.50
4.7	Preliminary and/or revised data are clearly identified	1.00
5	**Accessibility**	**0.56**
5.1	Statistics are presented to facilitate proper interpretation and comparisons (layout, clarity of texts, tables, and charts)	1.00
5.2	Dissemination media and format are adequate	0.25
5.3	Statistics are released on a pre-announced schedule	1.00
5.4	Statistics are made available to all users at the same time	0.75
5.5	Statistics not routinely disseminated are made available upon request	1.00
5.6	Documentation on concepts, scope, classifications, basis of recording, data sources, and statistical techniques is available, and differences from internationally accepted standards, guidelines, or good practices are annotated	0.75
5.7	Levels of detail are adapted to the needs of the intended users	0.00
5.8	Contact points for each subject field are publicized	0.25
5.9	Catalogs of publications and other services, including information on any charges, are widely available	0.00

Using the average scores for each Aspect of Quality, one can visualize the overall result of the assessment and make quick recommendations for an overall approach to improving data quality. Fig. 4.1 shows that only Methodological Soundness is doing well in the sample described in Table 4.1. The other areas, although balanced relative to each other, are well below 1.0, which is the highest possible score.

Fig.4.1 Summary Score for Country Example
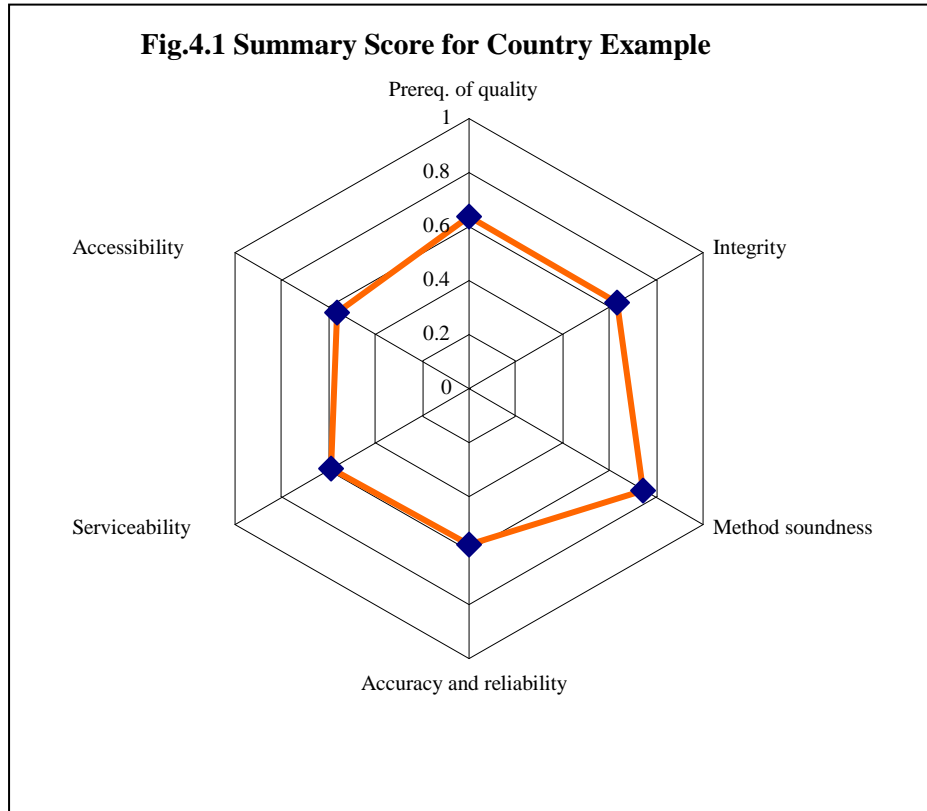
The important points for analysis in Table 4.1 and Figure 4.1 are:

a. **Identification of weak Aspects of Quality:** The goal is to identify which Aspect of Quality needs more attention in the short run. For example, average scores may indicate that Accessibility is the weakest link in the system. The review of the average scores gives a broad idea about the direction that one could take to improve data quality.
b. **Identification of weak elements within each Aspect of Quality:** The goal of this part of the analysis is to see which questions within each Aspect need attention.
c. **Assessing of the prospective impact of short term changes:** Based on the availability of human and financial resources, make a list of short run changes that need to be made within each Aspect and assign a hypothetical score that could be obtained if the change is implemented as planned in the short run (6 months or less). The recalculated score would give the analyst an estimate of the prospective impact of the short run change on each Aspect. The list of short run changes can be included in an action plan for the following fiscal year.
d. **Assessing the prospective impact of longer-term changes:** For changes requiring more time, the method for assessing the impact of the correction is the same as above, except that the impact would not be felt in the Aspect score until the corrective measure is implemented. However, the action plan should reflect the changes implemented from year to year as required by the introduction of the corrective measure.

4.1 Analyzing and comparing several countries

The analysis of data quality using the SABER EMIS Assessment Tool permits comparison among countries. The score assigned to each question in the SEAT is recorded separately in the SEAT Scorecard, an Excel sheet that can be used to calculate averages and build graphs. The results shown below in Table 4.2 are the combined results from four of the six Caribbean countries evaluated in the SABER EMIS Pilot[9].

The first part of the analysis of Table 4.2 focuses on the average scores assigned to each of the six Aspects of Quality: pre-requisites of quality, data integrity, methodological soundness, data accuracy and reliability, serviceability, and accessibility. In terms of pre-requisites of quality (0), it is clear that Country A is substantially behind the other three countries. Two of the four countries need to improve their legal framework (0.4) and the adequacy of their resources (0.5) to set the stage for improved data quality.

Table 4.2 SEAT Scoring Matrix for an assessment of data quality in four countries				
Aspect of Quality	**Country A**	**Country B**	**Country C**	**Country D**
0 **Prerequisites of quality**	**0.45**	**0.66**	**0.70**	**0.52**
0.1 Responsibility for collecting and disseminating education data is clearly specified	0.75	0.75	1.00	0.50
0.2 Data sharing and coordination among different agencies are adequate	0.50	0.25	0.50	0.50
0.3 Individual/personal data are kept confidential and used for statistical purposes only	0.50	0.75	1.00	0.75
0.4 Statistical reporting is ensured through legal mandate and/or measures to encourage response	0.25	0.25	0.75	0.75
0.5 Staff, facilities, computing resources, and financing are commensurate with the activities	0.25	0.50	0.75	0.75
0.6 Processes and procedures are in place to ensure that resources are used efficiently	0.25	1.00	0.50	0.75
0.7 Education statistics meet user needs and those needs are monitored continuously	0.75	0.75	0.75	0.75
0.8 Processes are in place to focus on quality	0.50	1.00	1.00	0.50
0.9 Processes are in place to monitor the quality of data processes	0.00	0.50	0.75	0.00
0.10 Processes are in place to deal with quality considerations in planning the stat program	1.00	0.75	0.25	0.25
0.11 Mechanisms exist for addressing new and emerging data requirements	0.25	0.75	0.50	0.25
1 **Assurances of integrity**	**0.50**	**0.44**	**0.58**	**0.53**
1.1 Statistics are produced on an impartial basis	0.25	0.25	1.00	0.25
1.2 Professionalism of staff is actively promoted	0.25	0.50	0.25	0.50
1.3 Choices of data sources and statistical techniques are made solely by statistical considerations	0.75	0.75	1.00	0.75
1.4 Agency is entitled to comment on erroneous interpretation and misuse of statistics	0.25	0.50	1.00	0.75

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[9] Because of legal reasons the names of the countries must remain confidential for the time being.

Table 4.2 SEAT Scoring Matrix for an assessment of data quality in four countries		Country A	Country B	Country C	Country D
Aspect of Quality					
1.5	Terms and conditions are available to the public	0.75	0.25	0.00	0.00
1.6	Public is aware of internal governmental access to statistics prior to their release	0.50	0.50	0.00	0.00
1.7	Products of education statics agency are clearly identified	0.50	0.25	0.00	0.75
1.8	Advanced notice is given of major changes in methodology, source data, and statistical techniques	0.50	0.00	1.00	1.00
1.9	Guidelines for staff behavior are in place and are well known to the staff	0.75	1.00	1.00	0.75
2	**Methodological soundness**	**0.75**	**0.50**	**0.63**	**0.38**
2.1	Overall structure, concepts and definitions follows internationally accepted standards, guidelines, or good practices	1.00	1.00	1.00	0.25
2.2	Scope is broadly consistent with internationally accepted standards, guidelines, or good practices	0.50	0.25	0.50	0.50
2.3	Classification systems are broadly consistent with internationally accepted standards, guidelines, or good practices	1.00	0.75	1.00	0.75
3	**Accuracy and reliability**	**0.53**	**0.75**	**0.70**	**0.48**
3.1	Source data are obtained from comprehensive data collection that takes into account country-specific conditions	0.50	0.50	0.75	0.50
3.2	Data are reasonably confined to the definitions, scope, classifications, and time of recording required	0.75	0.50	0.25	0.25
3.3	Source data are timely (6 months after event)	0.50	0.75	1.00	0.00
3.4	Other data sources, such as censuses, surveys, and administrative records, are routinely assessed	0.25	0.50	0.00	0.50
3.5	Data compilation employs sound statistical techniques to deal with data sources	1.00	1.00	1.00	0.50
3.6	Other statistical procedures (data editing, transformations, and analysis) employ sound statistical techniques	0.25	0.75	1.00	0.75
3.7	Intermediate results are validated against other information where applicable	0.50	0.50	1.00	0.50
3.8	Statistical discrepancies in intermediate data are assessed and investigated	1.00	1.00	1.00	0.75
3.9	Statistical discrepancies and other potential indicators or problems in statistical outputs are investigated	0.00	1.00	1.00	0.75
3.10	Studies and analyses of revisions are carried out routinely and used internally to inform the processes	0.50	1.00	0.00	0.25
4	**Serviceability**	**0.44**	**0.69**	**0.53**	**0.25**
4.1	Periodicity follows dissemination standards	1.00	1.00	1.00	1.00
4.2	Timeliness follows international dissemination standards	0.50	0.50	1.00	0.50
4.3	Statistics are consistent within the dataset	0.50	0.75	1.00	0.50
4.4	Statistics are consistent or reconcilable over a reasonable period of time	0.50	0.75	0.75	0.00
4.5	Statistics are consistent or reconcilable with those obtained through other data sources and/or statistical	0.00	1.00	0.00	0.00

Table 4.2 SEAT Scoring Matrix for an assessment of data quality in four countries		Country A	Country B	Country C	Country D
Aspect of Quality					
	frameworks				
4.6	Revisions follow a regular and transparent schedule	0.00	0.50	0.25	0.00
4.7	Preliminary and/or revised data are clearly identified	0.50	1.00	0.25	0.00
5	**Accessibility**	**0.36**	**0.61**	**0.47**	**0.47**
5.1	Statistics are presented to facilitate proper interpretation and comparisons (layout, clarity of texts, tables, and charts)	1.00	1.00	0.75	1.00
5.2	Dissemination media and format are adequate	0.25	0.75	0.75	0.75
5.3	Statistics are released on a pre-announced schedule	0.00	0.25	0.25	0.25
5.4	Statistics are made available to all users at the same time	0.25	1.00	1.00	0.75
5.5	Statistics not routinely disseminated are made available upon request	0.75	0.50	1.00	0.50
5.6	Documentation on concepts, scope, classifications, basis of recording, data sources, and statistical techniques is available, and differences from internationally accepted standards, guidelines, or good practices are annotated	0.50	0.75	0.00	0.75
5.7	Levels of detail are adapted to the needs of the intended users	0.50	1.00	0.00	0.00
5.8	Contact points for each subject field are publicized	0.00	0.25	0.50	0.25
5.9	Catalogs of publications and other services, including information on any charges, are widely available	0.00	0.00	0.00	0.00

The overall results of Figure 4.2 indicate two countries—Country B and Country C—are doing better in terms of accuracy and reliability, while Country A is doing better than the others in Methodological Soundness. All of the countries need to make efforts to improve their standing in the remaining Aspects of Quality.

The next step in the analysis is breaking down the subcomponents of each Aspect of Quality. The analysis of the subcomponents allows for a more specific set of recommendations and for the preparation of a work plan specifically oriented toward improving data quality.

4.2   Organizing the SEAT results

The SEAT allows for the detailed analysis of each Aspect of Quality from the Prerequisites of Quality (0) to Accessibility (5). To describe the level of data quality, the SEAT has four benchmarking levels:

   (i)   *Latent*, which indicates that the process or action required to improve the Aspect of Quality is not in place
   (ii)   *Emerging*, which indicates that the process or action is in progress of implementation
   (iii)   *Established*, which indicates that the process or action is in place and it meets standards
   (iv)   **Mature**, which indicates that the process or action is an example of best practice.

When analyzing the different Aspects of Quality through the SEAT, **a country is categorized as latent if the country scores 0, emerging if it scores 0.25 and 0.5, established if it scores 0.75 and mature if it scores 1.** For presenting the results, it is recommended to color code the cells of the tables in order to facilitate data display as demonstrated in Tables 4.3 to 4.8 below.

The first Aspect of Quality to analyze is **the pre-requisites of quality** – the legal and institutional conditions that should be in place to facilitate the implementation of a data quality improvement program. The results (Table 4.3) show that the legal framework tends to be managed by informal arrangements to coordinate and share data (0.2) and that the processes for monitoring data quality (0.9) are not in place in two countries.

Table 4.3 Strengths and weaknesses in the pre-requisites of quality					
Aspect of Quality		Country A	Country B	Country C	Country D
0	**Prerequisites of quality**	**0.45**	**0.66**	**0.70**	**0.52**
0.1	Responsibility for collecting and disseminating education data is clearly specified	0.75	0.75	1.00	0.50
0.2	Data sharing and coordination among different agencies are adequate	0.50	0.25	0.50	0.50
0.3	Individual/personal data are kept confidential and used for statistical purposes only	0.50	0.75	1.00	0.75
0.4	Statistical reporting is ensured through legal mandate and/or measures to encourage response	0.25	0.25	0.75	0.75
0.5	Staff, facilities, computing resources, and financing are commensurate with the activities	0.25	0.50	0.75	0.75
0.6	Processes and procedures are in place to ensure that resources are used efficiently	0.25	1.00	0.50	0.75
0.7	Education statistics meet user needs and those needs are monitored continuously	0.75	0.75	0.75	0.75
0.8	Processes are in place to focus on quality	0.50	1.00	1.00	0.50
0.9	Processes are in place to monitor the quality of data processes	0.00	0.50	0.75	0.00
0.10	Processes are in place to deal with quality considerations in planning the stat program	1.00	0.75	0.25	0.25
0.11	Mechanisms exist for addressing new and emerging data requirements	0.25	0.75	0.50	0.25

In the above example, there is no discernable pattern that would call attention to specific areas in need of intervention across all the countries. However, the SEAT data also shows that Country A needs to make some more efforts to improve its pre-requisites of quality. Overall, the results show that there is a need to

introduce the concept of data quality to policy makers in order to obtain support for putting into place the legal and institutional conditions for the formal functioning of a data quality improvement program.

In terms of **assurances of data integrity,** the emerging picture is a mixed one (Table 4.4). Three of the four countries in the example show that data impartiality (1.1) is not assured since there are only informal mechanisms available for protecting the professionalism of the data-producing institution. The exception is Country C, which has full compliance with this issue. This is not to say that data integrity is a problem—the results only indicate that the data producing institution does not have procedures in place to protect the professionalism of its staff and to ensure data integrity (1.2). The data also show that half of the countries in the example have not publicly released the terms and conditions under which education statistics are collected, processed, and disseminated (1.5). These issues are not too crippling in terms of the functioning of a statistical unit, but are large loopholes that could be a source of trouble in the future. Country C shows a mixed performance: It has a higher number of green cells and red cells with best practices in some subcomponents mixed with nothing in others, indicating that some issues have been left completely unattended.

Table 4.4 Strengths and weaknesses in the assurances of data integrity					
Aspect of Quality		**Country A**	**Country B**	**Country C**	**Country D**
1	**Assurances of integrity**	**0.50**	**0.44**	**0.58**	**0.53**
1.1	Statistics are produced on an impartial basis	0.25	0.25	1.00	0.25
1.2	Professionalism of staff is actively promoted	0.25	0.50	0.25	0.50
1.3	Choices of data sources and statistical techniques are made solely by statistical considerations	0.75	0.75	1.00	0.75
1.4	Agency is entitled to comment on erroneous interpretation and misuse of statistics	0.25	0.50	1.00	0.75
1.5	Terms and conditions are available to the public	0.75	0.25	0.00	0.00
1.6	Public is aware of internal governmental access to statistics prior to their release	0.50	0.50	0.00	0.00
1.7	Products of education statics agency are clearly identified	0.50	0.25	0.00	0.75
1.8	Advanced notice is given of major changes in methodology, source data, and statistical techniques	0.50	0.00	1.00	1.00
1.9	Guidelines for staff behavior are in place and are well known to the staff	0.75	1.00	1.00	0.75

In contrast, **methodological soundness** (Table 4.5) seems to be the area where the four countries in the example are doing well, except on the scope of statistics (2.2), which do not seem to comply with international standards. However, the overall structure and concepts for education statistics (2.1) follow

international guidelines and the classification systems used for education statistics are mostly in compliance with international standards (2.3). Overall, the results for methodological soundness suggest that the four countries have been effective in setting up structure, guidelines and good practices, and now need to move on to the next step in terms of the definitions of indicators.

Table 4.5 Strengths and weaknesses in methodological soundness		Country A	Country B	Country C	Country D
Aspect of Quality					
2	**Methodological soundness**	**0.75**	**0.50**	**0.63**	**0.38**
2.1	Overall structure, concepts and definitions follow regionally and internationally accepted standards, guidelines, and good practices	1.00	1.00	1.00	0.25
2.2	Scope is in accordance with international standards, guidelines, or good practices	0.50	0.25	0.50	0.50
2.3	Classification systems are consistent with international standards, guidelines, or good practices	1.00	0.75	1.00	0.75

In terms of **accuracy and reliability** (Table 4.6), the results are similar to the results of methodological soundness. The higher incidence of Mature cells (marked in green) obtained in accuracy and reliability and in methodological soundness suggests that EMIS staff members seem to have good technical skills. Where countries may need help in improving accuracy and reliability is on the institutional side, in setting up formal procedures for the timely recording of statistics (3.3) and in the use of formal revisions studies (3.10) to ensure a minimization of errors in the future.

Table 4.6 Strengths and weaknesses in accuracy and reliability		Country A	Country B	Country C	Country D
	Aspect of Quality				
3	**Accuracy and reliability**	**0.53**	**0.75**	**0.70**	**0.48**
3.1	Source data are obtained from comprehensive data collection that takes into account country-specific conditions	0.50	0.50	0.75	0.50
3.2	Data are reasonably confined to the definitions, scope, classifications, and time of recording required	0.75	0.50	0.25	0.25
3.3	Source data are timely (6 months after event)	0.50	0.75	1.00	0.00
3.4	Other data sources, such as censuses, surveys, and administrative records, are routinely assessed	0.25	0.50	0.00	0.50
3.5	Data compilation employs sound statistical techniques to deal with data sources	1.00	1.00	1.00	0.50

3.6	Other statistical procedures (data editing, transformations, and analysis) employ sound statistical techniques	0.25	0.75	1.00	0.75
3.7	Intermediate results are validated against other information where applicable	0.50	0.50	1.00	0.50
3.8	Statistical discrepancies in intermediate data are assessed and investigated	1.00	1.00	1.00	0.75
3.9	Statistical discrepancies and other potential indicators or problems in statistical outputs are investigated	0.00	1.00	1.00	0.75
3.10	Studies and analyses of revisions are carried out routinely and used internally to inform the processes	0.50	1.00	0.00	0.25

The issue of **serviceability** (Table 4.8) shows a different picture: excellence in maintaining the periodicity of publications (4.1) but a bad record in four other topics. Serviceability refers to the ability of the education data system to be at the service of the citizenry by ensuring the relevance and timelines of its statistics. In this regard, the countries in the example have concentrated their efforts in being timely, and respecting the periodicity of the publication schedules. Where there is significant failure is in their efforts at crosschecking the data with other sources (4.5), at setting up formal procedures for doing data revisions and crosschecks (3.10), and at the establishment of formal protocols for informing users about the process of data revision (4.6).

Table 4.7 Strengths and weaknesses in serviceability					
Aspect of Quality		**Country A**	**Country B**	**Country C**	**Country D**
4	**Serviceability**	**0.44**	**0.69**	**0.53**	**0.25**
4.1	Periodicity follows dissemination standards	1.00	1.00	1.00	1.00
4.2	Timeliness follows international dissemination standards	0.50	0.50	1.00	0.50
4.3	Statistics are consistent within the dataset	0.50	0.75	1.00	0.50
4.4	Statistics are consistent or reconcilable over a reasonable period of time	0.50	0.75	0.75	0.00
4.5	Statistics are consistent or reconcilable with those obtained through other data sources and/or statistical frameworks	0.00	1.00	0.00	0.00
4.6	Revisions follow a regular and transparent schedule	0.00	0.50	0.25	0.00
4.7	Preliminary and/or revised data are clearly identified	0.50	1.00	0.25	0.00

Finally, there is the issue of **data accessibility** (Table 4.8), where the same pattern emerges as in the previous case: excellence in some areas mixed with areas in critical need. The main problem is in the area of documentation and access, where statistical offices seem to consider that other offices within the government are their only clients. This is a common pattern found in statistical offices without a clear legal mandate that defines and regulates their role, relying instead on oral traditions and informal arrangements for collaboration and information sharing.

Table 4.8 Strengths and weaknesses in accessibility		Country A	Country B	Country C	Country D
Aspect of Quality					
5	**Accessibility**	**0.36**	**0.61**	**0.47**	**0.47**
5.1	Statistics are presented to facilitate proper interpretation and comparisons (layout, clarity of texts, tables, and charts)	1.00	1.00	0.75	1.00
5.2	Dissemination media and format are adequate	0.25	0.75	0.75	0.75
5.3	Statistics are released on a pre-announced schedule	0.00	0.25	0.25	0.25
5.4	Statistics are made available to all users at the same time	0.25	1.00	1.00	0.75
5.5	Statistics not routinely disseminated are made available upon request	0.75	0.50	1.00	0.50
5.6	Documentation on concepts, scope, classifications, basis of recording, data sources, and statistical techniques is available, and differences from internationally accepted standards, guidelines, or good practices are annotated	0.50	0.75	0.00	0.75
5.7	Levels of detail are adapted to the needs of the intended users	0.50	1.00	0.00	0.00
5.8	Contact points for each subject field are publicized	0.00	0.25	0.50	0.25
5.9	Catalogs of publications and other services, including information on any charges, are widely available	0.00	0.00	0.00	0.00

The scores on each subcomponent can be aggregated by Aspect of Quality by calculating the simple average score. The aggregate score for each Aspect of Quality is in bold on the top row of each of the previous tables (Table 4.3 to 4.8) and is summarized graphically in Figure 4.2 (below).

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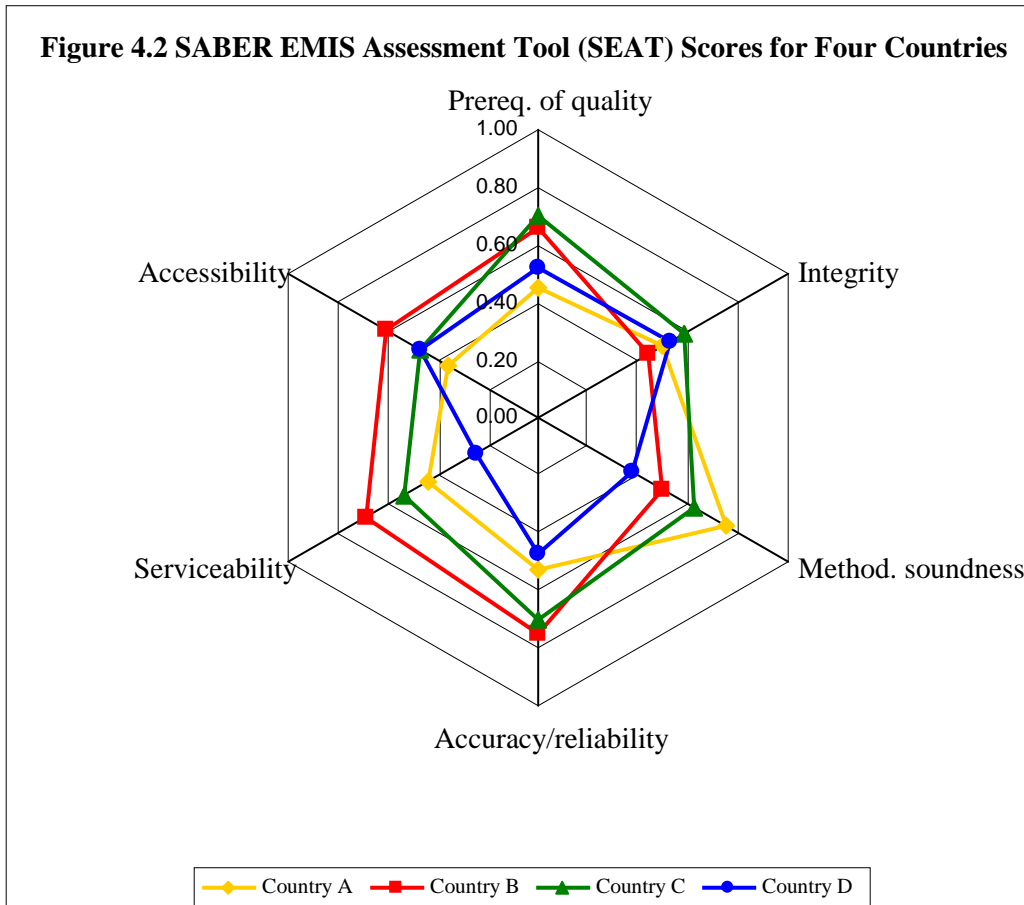**Figure 4.2 SABER EMIS Assessment Tool (SEAT) Scores for Four Countries**

Table 4.9 shows how the aggregate scores for each Aspect of Quality can be ranked using the SEAT and the interpretation of the benchmarks. For example, Country C scored 0.70 on the Pre-requisites of Quality, which places Country C in the Established benchmark described in the table below.

Table 4.9 SEAT Benchmarks for each Aspect of Quality	
Aspect of Quality	**Broad Description**
0 Prerequisites of quality	
Latent (Score: 0.0 - 0.30)	No data sharing or coordination among agencies; low levels of confidentiality in the use of information; unclear legal mandate for collecting statistics; little concern for data quality or for the needs of data users.
Emerging (0.31-0.59)	Data sharing but ad-hoc coordination among agencies; confidentiality assured but users not aware of it; efficient use of inadequate resources; users' needs are considered sporadically, and data quality variations commonly found despite efforts at improving data quality.
Established (0.60-0.79)	Data sharing and coordination in place; confidentiality assured; legal framework indirectly in place through the legal mandate of the census agency; more efficiency in resource use is needed; users' needs assessed but infrequently; data quality processes in place but enforcement needs improvement.
Mature (0.80-1.0)	Data sharing and coordination in place; confidentiality assured; legal framework in place; efficiency in resource use at acceptable levels; users' needs assessed yearly; data quality processes in place and enforced on a regular basis.
1 Assurances of integrity	

Table 4.9 SEAT Benchmarks for each Aspect of Quality	
Aspect of Quality	**Broad Description**
Latent (Score: 0.0 - 0.30)	Statistics are often modified; professionalism of staff is not promoted; technical decisions are based on statistical and political considerations; statistics are produced with major omissions on institutional responsibilities and user considerations.
Emerging (0.31-0.59)	Statistics are not impartial; professionalism of the staff is promoted on a limited basis; errors in statistics are corrected sporadically; statistics have institutional backing but chain of responsibility is unclear; major changes in methods, source data and techniques are sporadically made public and guidelines for staff behavior are short and incomplete.
Established (0.60-0.79)	Statistics are impartial; professionalism of the staff is promoted; errors in statistics are corrected regularly; statistics have institutional backing but chain of responsibility is unclear; major changes in methods, source data and techniques are made public and guidelines for staff behavior are in place, but need revisions or improvements.
Mature (0.80-1.0)	Statistics are impartial; professionalism of the staff is promoted; errors in statistics are always corrected; statistics institutional backing is clear and the chain of responsibility is easily determined; major changes in methods, source data and techniques are always made public and good guidelines for staff behavior are in place.
2 Methodological soundness	
Latent (Score: 0.0 - 0.30)	Structure, concepts, and definition of statistics do not follow international standards or accepted guidelines; statistics produced are of limited scope and use, and their classification system is improvised or only partially consistent with international standards.
Emerging (0.31-0.59)	Structure, concepts, and definitions of statistics follow international standards; Statistics are of limited scope, and their classification system is partially consistent with international standards.
Established (0.60-0.79)	Structure, concepts, definitions and classification system of statistics follow international standards, but their scope is less comprehensive than in internationally accepted standards.
Mature (0.80-1.0)	Structure, concepts, definitions, scope and classification system of statistics follow international standards.
3 Accuracy and reliability	
Latent (Score: 0.0 - 0.30)	Source data are not assessed or assessed only sporadically; the compilation of source data follows methods that do not comply with international standards; intermediate results are not validated with data from other sources; statistical discrepancies are investigated and corrected sporadically or on an ad-hoc basis.
Emerging (0.31-0.59)	Source data are assessed with some regularity; source data come from comprehensive data collection tailored to the country's condition; the compilation of source data follow methods that loosely comply with international standards; intermediate results are validated with other data sources only when discrepancies are large and easily noted; statistical discrepancies are investigated and corrected sporadically or on ad-hoc basis.
Established (0.60-0.79)	Source data are assessed regularly; source data come from comprehensive data collection tailored to the country's condition; the compilation of source data follow international standards; intermediate results are validated with other data sources if discrepancies are easily noted; statistical discrepancies are investigated and corrected regularly.
Mature (0.80-1.0)	Source data are assessed regularly; source data come from comprehensive data collection tailored to the country's condition; the compilation of source data follow international standards; intermediate results are always validated with other data sources; statistical discrepancies are always investigated and corrected.
4 Serviceability	
Latent (Score: 0.0 - 0.30)	Statistics are published at irregular intervals and their timeliness is inconsistent with international standards; statistics are inconsistent within the data set and with other data sources; revisions are sporadic or absent and preliminary data are not identified.
Emerging (0.31-0.59)	Statistics are published at regular intervals but their timeliness is inconsistent with international standards; statistics are sometimes inconsistent within the data set and with other data sources; revisions are sporadic and preliminary data are rarely identified.

Table 4.9 SEAT Benchmarks for each Aspect of Quality	
Aspect of Quality	**Broad Description**
Established (0.60-0.79)	Statistics are published at regular intervals and their timeliness is consistent with international standards; statistics are consistent within the data set and with other data sources; revisions are regular but preliminary data are not always identified.
Mature (0.80-1.0)	Statistics are published at regular intervals and their timeliness is consistent with international standards; statistics are consistent within the data set and with other data sources; revisions regular and preliminary data are always identified.
5 Accessibility	
Latent (Score: 0.0 - 0.30)	The presentation of statistics is confusing; dissemination is inadequate and sporadic; documentation is inadequate or insufficient; level of detail does not conform to user needs, and there is no list of publications available to users.
Emerging (0.31-0.59)	The presentation of statistics needs improvement for better interpretation; dissemination is adequate but sporadic; documentation is deficient; level of detail conforms to user needs, but there is no list of publications available to users.
Established (0.60-0.79)	The presentation of statistics is adequate for their interpretation; dissemination is adequate but may benefit from including online media; documentation is good; level of detail conforms to user needs, but there is no list of publications available to users.
Mature (0.80-1.0)	The presentation of statistics is good for their interpretation; dissemination is good and it includes online media; documentation is good and the level of detail conforms to user needs, and there is a catalog of publications available to users.

Finally an **overall ranking** of the entire education statistics system can be developed by calculating the simple average of the aggregate scores for the Aspects of Quality. Table 4.10 summarizes the characteristics of an EMIS system in each benchmarking level.

Table 4.10 SEAT Overall Benchmarking Levels	
Level of data quality	**Description**
Latent (score 0.0-0.30)	Lacking statistical infrastructure; Little government commitment and use of data; greater needs for improving quality of national data than for internationally comparable data.
Emerging (0.31-0.59)	Basic data channels in place though still weaknesses in reporting by providers; some commitment to data use; data are still fragmented across ministries; coverage and relevance needs large improvement; some regional benchmarks used.
Established (0.60-0.79)	Stable channels of data collection and production. There is a clear strategy and investment in data and statistics. More varied sources of data including sample-based surveys. Some emerging policy issues are addressed in terms of measurement. Regional and international comparisons are frequently cited.
Mature (0.80-1.0)	Integrated system of information across state and non-state providers; strong links between users and producers of data ensures responsiveness to relevant policy issues and data use; systems and information demands are often more complex; data on individuals regularly collected or tracked; International comparisons used widely and help to drive policy reforms.

The **overall rankings** of the four countries included in the example indicate that the countries are in good shape technically but need to make significant adjustments in three key areas. They need to:

    a. Work on formalizing the procedures now in place for sharing data and statistics, as well as formalizing the legal framework that ensures professionalism and data integrity.

    b. Make the necessary modifications to their indicators to ensure compliance with international standards, and

    c. Redefine their client base to include the general public, civil society organizations, and any other users of statistics outside the government.

Making these adjustments should not take much time, but redefining the client base will require some serious thinking within the statistical agency since the issue of data accessibility is intimately tied to the pre-requisites of quality and since the statistical agency would need to have a legal framework in place that would force it to become accountable to a wider client base (in this case, to society at large).

One good aspect of the SEAT is that it relies on a self-review that is based on a list of questions that lead to reflection and eventual action if the country is committed to improving data quality. For the professionals and technicians that attend the assessment workshop, the systematic nature of the quality assessment exercise gives them the moral authority to ask for the changes required to improve data quality; their assessment is based on analysis and not just on opinion.

5. SABER EMIS Leading Indicators for Monitoring Data Quality

Conducting a DQAF requires a considerable amount of resources and effort. Past experience has shown that countries require about two months to conduct a comprehensive data quality assessment and to put together an action plan to address the challenges identified. Applying the SABER EMIS Assessment Tool (SEAT) is less time consuming but still requires considerable effort that could make it impractical to do on an annual basis.

In order to provide a simple, low-cost tool for regularly monitoring progress, the **SABER EMIS Leading Indicators of Data Quality** can be used to do a quick assessment. This simple assessment is similar in nature to the use of leading economic indicators and can be used to broadly monitor data quality between full assessment exercises. There is one Leading Indicator for each of the six Aspects of Quality (Table 5.1). Each Leading Indicator is described in detail in the section below.

Table 5.1 SABER EMIS Leading Indicators of Data Quality		
Aspect of Quality	**Leading Indicator**	**Score**
Prerequisites of quality	Percent of financial resources in education that goes into education statistics	
Data Integrity	Databases are available for users outside of government	
Methodological Soundness	Percent of UIS indicators that are estimated with the data provided by the country	
Accuracy and Reliability	Percent of primary and secondary schools audited for accuracy in their enrollment figures	
Serviceability	Time in months elapsed between the initiation of the school year and the publication of enrollment data for that year	
Accessibility	Percentage of schools that receive a report on education sector statistics	

5.1 Indicator of Pre-requisites of Quality: Percent of financial resources in education that goes into education statistics

Definition: Total operational costs of the unit in charge of education statistics expressed as a percentage of total Ministry of Education expenditures.

Purpose: To show the general level of commitment on part of the government to collect, compile, produce and disseminate education statistics.

Calculation method: Divide the yearly cost of staff and materials used for the collection, compilation, production and dissemination of education statistics within the Ministry of Education by the total operating budget of the Ministry for the year and multiply by 100.

Data required: Detailed yearly expenditures in all activities of the Ministry of Education.

Data source: Directorate of Education Finances at the Ministry of Education; Ministry of Finance; Education Commission of the National Assembly; National Budget.

Types of disaggregation: National level only.

Interpretation: There is no set initial percentage. However, once a data quality improvement plan is in place, the projected implementation costs should be used as reference points for evaluation of commitment on part of the government. The main goal is to have a plan for good data quality backed by enough financial resources to make it feasible.

Quality standards: Percentage should be based on actual expenditures, not on proposed budget expenditures. The best quality budgets are the ones inside of the Ministry of Education, since they have the proper level of disaggregation needed to properly identify real expenditures. Since education budgets spend less than 15 percent in central administration, a normal range for this indicator should be between 1%-5% of the total education budget.

Limitations: In some countries the cost of collecting, producing and disseminating educational statistics may be handled by the central office of statistics, which may pose problems of fungibility of funds. In such cases one has to work with central statistics office to get the indicator, which may take a long time.

5.2 Indicator of Data Integrity: Databases are available for users outside of government

Definition: Yes/No

Purpose: To ensure that others can analyze the same data as the government and be able to produce more analytical insights about education sector performance; to allow the general public to ensure that data are transparent, and to ensure that government indicators and statistics are not being manipulated to hide problems or issues in the education sector.

Calculation method: There is no calculation method. Either the data are available or they are not.

Data required: Website where users can download the data sets; window where users can ask for digital files.

Data source: Ministry of Education; central office of statistics; EMIS

Types of disaggregation: n/a

Interpretation: Data integrity can be tested if users can generate the same or very similar indicators than those published by the government. Data integrity can be tested if the data files are corroborated at the school level—e.g., number of students, number of teachers, and number of schools in a given area.

Quality standards: Acquiring the data should take little time online and should not require onerous procedures for obtaining permission.

Limitations: In some countries, the legal framework may limit the type of information made available to the general public. Household surveys may fall into this category.

5.3 Indicator of Methodological Soundness: Percent of UIS indicators that are estimated with the data provided by the country

Definition: Percentage of indicators in the education tables published by UNESCO Institute of Statistics (UIS) that can be calculated with the data and statistical information sent by the government to UIS.

Purpose: To show that the government takes the timeliness and periodicity of education statistics seriously.

Calculation method: Divide the total number of indicators that are shown in the UIS tables in a given year by the total number of UIS indicators for that year and multiply by 100.

Data required: UIS indicator tables for education

Data source: UIS; EMIS

Types of disaggregation: n/a

Interpretation: UIS generally publishes government data with a lag of two calendar years. Data for 2010 in a given country appears in the UIS tables in 2012. Delays that last longer than two years generally reflect problems with data quality, methodological revisions, or non-compliance with the UIS agreement. In most cases the issues relate to revisions of data that seem to have problems with methodology, accuracy, or consistency.

Quality standards: A rate lower than 30% should be unacceptable. Most developed countries have rates of 75% or more.

Limitations: In some countries it is very difficult to obtain credible statistics from universities because of constitutional mandates that give full autonomy to institutions in tertiary education.

5.4 Indicator of Accuracy and Reliability: Percent of primary and secondary schools audited for accuracy in their enrollment figures.

Definition: Percentages of schools that have been audited to verify student enrollment.

Purpose: To ensure accuracy in all indicators related to student enrollment and to ensure the integrity of data on school finance.

Calculation method: Divide the number of schools audited during the year by the total number of schools and multiply by 100.

Data required: Total number of schools and total number of school audits.

Data source: Ministry of Education; Office of the Comptroller; Ministry of Finance; EMIS

Types of disaggregation: By education level; by region or geographical area.

Interpretation: Many schools systems transfer funds to schools on the basis of enrollment, which creates an incentive for inflating enrollment. As a result, unless there are regular enrollment audits, all the data and indicators related to enrollment can be biased and the discrepancy is directly related to the amount of enrollment inflation.

Quality standards: The rate should be similar to a sampling rate: around 5% of schools.

Limitations: The rate of audit is unimportant if the results have no consequences for violators.

5.5   Indicator of Serviceability: Time in months elapsed between the initiation of the school year and the publication of enrollment data for that year

Definition: Number of months elapsed between the date of initiation of the school year and the date of release of enrollment data.

Purpose: Ensure timeliness in the publication of enrollment figures.

Calculation method: Count the number of months between the initiation of the school year and the release date of release of the data on enrollment.

Data required: Dates of initiation of the school year and release date of release of enrollment data.

Data source: Ministry of Education; EMIS

Types of disaggregation: n/a

Interpretation: Delays may be caused by lack of supervision at the school level and low levels of supervision at the central level. Low levels of supervision can be highly correlated with errors in data.

Quality standards: A lag longer than 3 months indicates acceptable operational efficiency at the school and central levels. A delay longer than 6 months indicates gross inefficiencies in the data compilation process. Longer delays are unacceptable.

Limitations: Long delays are sometimes intentional because staff assigned to the compilation of enrollment figures may fear that they may be considered redundant if the enrollment statistics are released too rapidly. This is a managerial issue, not a data quality issue.

5.6   Indicator of Accessibility: Percentage of schools that receive a report on education sector statistics

Definition: Percentage of schools that receive reports of the indicators and statistics that were created using the data sent by the school to the central offices.

Purpose: To give statistical information back to the school so they can see the importance of their data in the creation of education statistics; to give the school information that can be used for comparing themselves to national and regional standards; to give the school information that can be used to improve accountability to the community.

Calculation method: Number of statistical packages sent to the schools divided by the total number of schools multiplied by 100. Also, number of downloads by schools divided by the total number of schools multiplied by 100 (in the case of digital access only).

Data required: Accounting data on statistical packages sent; number of downloads.

Data source: Ministry of Education; EMIS

Types of disaggregation: By education level, by region

Interpretation: School autonomy goes hand-in-hand with school accountability. Data provided by the school can be used to make effective comparisons with other schools of similar characteristics and to allow parents and school councils to track progress in their own schools, which can enhance accountability.

Quality standards: Ideally an index of 100% should be a good goal.

Limitations: Schools in rural or very poor areas may trouble accessing the Internet or receiving mail.

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Annex 1. SABER EMIS Assessment Tool Scoring Matrix

Aspect of Quality		Scoring				
		Latent	**Emerging**		**Established**	**Mature**
		0	**0.25**	**0.5**	**0.75**	**1.0**
0	**Prerequisites of quality**					
0.1	**Responsibility for collecting and disseminating education data is clearly specified**	No lines of responsibility defined and no law	Limited agreement on responsibilities and no law	Wide agreement on responsibilities but no law	Law exists but vague on responsibilities; it needs clarification and/or updating	Law with clear roles and responsibilities being implemented
0.2	**Data sharing and coordination among different agencies are adequate**	No sharing, no arrangements, no consistency	Informal agreement; sporadic/ad hoc sharing	Informal agreement to share exists and is mostly implemented	Formal agreement to share exists but not implemented completely	There are formal arrangements, logistics, and verification of consistency for inter agency cooperation
0.3	**Individual/personal data are kept confidential and used for statistical purposes only**	No Law; No Confidentiality	Law, but no confidentiality	Law, some confidentiality	Law and confidentiality, but respondents not informed of their rights	Law, Confidentiality, full rights
0.4	**Statistical reporting is ensured through legal mandate and/or measures to encourage response**	No legal mandate, conflicts unresolved, no penalties, no assistance	Informal arrangements, conflicts unresolved, no penalties, yes assistance	Legal mandate, conflicts unresolved, no penalties, yes assistance	Legal mandate, conflicts resolved, no penalties, yes assistance	Legal mandate, conflicts resolved, penalties enforced, yes assistance
0.5	**Staff, facilities, computing resources, and financing are commensurate with the activities**	Short on staff, short on computers, no training, no server and outdated software	Staff insufficient, training required, 75% of computers and software and storage need updating	Staff is sufficient but training required, 50% of computers and software need updating, but storage is adequate	Staff is sufficient, training is required, 25% of computers need updating but software and storage are adequate	Staff is sufficient, good training, enough computers & storage, updated software

0.6	**Processes and procedures are in place to ensure that resources are used efficiently**	Management disorganized, untrained, and inefficient: Data management and processes highly inefficient	Management of human and physical resources is inefficient; Technical data processes with duplications and errors	Management of human and physical resources is inefficient; there is no monitoring of resource use but data management procedures just need improvement	Efficient management and monitoring of physical resources, but improvements needed in human resource management. Data management procedures in place	Efficient management of human and physical resources, good monitoring of resource use, and data management procedures in place
0.7	**Education statistics meet user needs and those needs are monitored continuously**	No user consultation, no user feedback, no int'l participation	Some user consultation but no feedback, no int'l participation	User consultation, some feedback, no int'l participation	User consultation, some user feedback, some int'l participation	Users are consulted in the design of statistics to be produced, there is user feedback; participation in int'l meetings
0.8	**Processes are in place to focus on quality**	No quality awareness in place	Mgmt. promotes ad hoc quality improvement measures	Mgmt. clearly committed to improving quality	Quality is a main objective of operating plan	Quality procedures in place and enforced by mgmt.
0.9	**Processes are in place to monitor the quality of data processes**	No Formal reviews; No external reviews; no user feedback on quality	Formal reviews every 10 yrs; no external reviews; user feedback on quality every 10 yrs	Formal reviews every 5 yrs; external reviews every 10 yrs.; user feedback on quality every 5 yrs	Formal reviews every 3 yrs; external reviews every 5 yrs.; user feedback on quality every 3 yrs	Annual Formal reviews; external reviews every 3 yrs.; annual user feedback on quality
0.10	**Processes are in place to deal with quality considerations in planning the stat program**	There is no awareness of tradeoffs	There is awareness about tradeoffs but no tradeoff analysis are conducted	Tradeoff analysis conducted in ad hoc manner	Tradeoff analysis conducted occasionally for preserving coverage	Tradeoff analysis conducted regularly for preserving accuracy and reliability
0.11	**Mechanisms exist for addressing new and emerging data requirements**	No meetings, no feedback	Meetings with stakeholders every 5 years and no formal instruments for feedback applied	Meetings with stakeholders every 5 years and formal instruments for feedback applied	Meetings with stakeholders every 3 years and formal instruments for feedback applied	Annual meeting with stakeholders and formal instruments for feedback applied
1	**Assurances of Integrity**					

1.1	**Statistics are produced on an impartial basis**	There is no law protecting the professional independence of the data producing institution	There are informal mechanisms available for protecting professionalism of data producing institution	There is a law protecting professionalism but it is not enforced	There is a law protecting professionalism but is outdated and/or enforced unevenly	A law is in force protecting the professional independence of the data producing institution
1.2	**Professionalism of staff is actively promoted**	Professionalism of staff is ignored	Professional credentials considered for recruitment and promotion only sporadically	Professional credentials are considered for recruitment and promotion	Professional credentials are considered for recruitment and promotion and staff are encouraged to publish	Professional credentials are considered for recruitment and promotion and staff are encouraged to publish. There is a peer review process in place
1.3	**Choices of data sources and statistical techniques are made solely by statistical considerations**	Choice of data sources are arbitrary and staff do not use technical criteria	Choice of data sources are technically justified; staff can use technical criteria, but they are not made public	Choice of data sources are technically justified only sometimes; staff are encouraged to enforce technical criteria on an ad hoc basis and not publicly	Choice of data sources are technically justified; staff are encouraged to enforce technical criteria but not publicly	Choice of data sources are technically justified; staff are encouraged to enforce technical criteria and publish those criteria
1.4	**Agency is entitled to comment on erroneous interpretation and misuse of statistics**	Agency never comments on errors or misinterpretations or provides technical explanations in public	Agency comments publicly only on technical errors but not on misinterpretations and does not provide technical explanations	Agency comments only on technical errors and provides technical explanations but does not act on misinterpretations	Agency comments publicly on technical errors, provides technical explanations and comments on misinterpretations only under pressure	Agency comments publicly on technical errors, provides technical explanations and comments on misinterpretations on a routine basis
1.5	**Terms and conditions are available to the public**	Terms and conditions and additional information not released	Terms and conditions and additional information are difficult to find, although they are available on request.	Terms and conditions and additional information are difficult to find, although they are available.	Terms and conditions and links to additional information are available online only.	Terms and conditions are clearly available; links to additional information, are clear and open in print and online

1.6	**Public is aware of internal governmental access to statistics prior to their release**	No information given about internal access to preliminary data	Information on internal access given upon request	Some information on internal access to preliminary data is publicly available	All information about internal access to preliminary data given upon request.	Information about internal access to preliminary data is openly available
1.7	**Products of education statistics agency are clearly identified**	There is no attribution to any institution in the statistical publications	Attribution given only to the Ministry of Education and no requests are made for attribution from others	Attribution is given to the Ministry of Education and other entities in the publication, but no requests for attribution from others	Attribution given to the agency, to others, but no requests for attribution from others enforced	Statistical unit is clearly identified as the source of data, clearly identifies collaborating institutions, and attribution is requested from other users
1.8	**Advance notice is given of major changes in methodology, source data, and statistical techniques**	No notices are given on any changes in methodology, source data and stat techniques	Agency sends notice of major changes in methods, sources and techniques only upon request	Agency sends notice of major changes in methods, sources and techniques only to selected institutions	Agency gives notice of major changes in methods, sources and techniques several months after making the changes	Agency sends notice of major changes in methods, sources and techniques as soon as the decision is made
1.9	**Guidelines for staff behavior are in place and are well known to the staff**	Guidelines for staff behavior are non-existent	Guidelines for staff behavior are vague and not communicated to staff	Guidelines for staff behavior are in place but not communicated to the staff	Guidelines for staff behavior are in place and are well known to the staff	Guidelines for staff behavior are in place, are well known to the staff and actively enforced
2	**Methodological Soundness**					
2.1	**Overall structure, concepts and definitions follow regionally and internationally accepted standards, guidelines, and good practices**	Structure, concepts and definitions are inconsistent from year to year, without proper documentation, and without consistency with regional or international standards	Structure, concepts and definitions do not have proper documentation and may or may not consistent with regional and international standards	Structure, concepts and some definitions have proper documentation and may or may not be consistent with regional and international standards	Structure, concepts and definitions have proper documentation but definitions do not conform with regional and international standards	Overall structure, concepts and definitions follow regionally and internationally accepted standards, guidelines, and good practices

2.2	**Scope is in accordance with international standards, guidelines, or good practices**	Scope of agency statistics covers less than 50% of UIS indicators	Scope of agency statistics covers 50-70% of UIS indicators	Scope of agency statistics covers 71-90% of UIS indicators	Scope of agency statistics covers 91-100% of UIS indicators	100% of OECD indicators are produced by the Agency
2.3	**Classification systems are consistent with international standards, guidelines, or good practices**	ISCED standard is not applied	Classification is in process	Classification systems are broadly consistent with international standards, guidelines, or good practices except for students, teachers, and expenditures	Classification systems are broadly consistent with internationally accepted standards, guidelines, or good practices except for expenditures	Classification systems are completely consistent with internationally accepted standards, guidelines, or good practices
3	**Accuracy and Reliability**					
3.1	**Source Data are obtained from comprehensive data collection that takes into account country-specific conditions.** *Score absent conditions in descending order. Explain in the comments.*					Source data includes (1) system structure; (2) regular census on enrolment, teachers, school and education finances; (3) education demand via HH surveys, (4) learning outcomes, and (5) school characteristics that impact education quality
3.2	**Data are reasonably confined to the definitions, scope, classifications, and time of recording required.** *Score absent conditions in descending order. Explain in the comments.*					All Source data should comply with the standards and scope of education statistics data; there are procedures to update and standardize source data as needed; data compilers are aware of inter-source differences; proper referencing is done for documenting different source data

3.3	**Source Data are timely (6 months after event)**	Ad hoc or sporadic data exchange between education statistics and source data providers	Source data agencies are compliant with deadline needs of education statistics	Source data agencies are compliant with deadline needs of education statistics; education data are provided more than six months after the end of the school year to other source providers	Source data agencies are compliant with deadline needs of education statistics; there are follow up procedures for ensuring compliance; education data are provided more than six months after the end of the school year to other source providers	Source data agencies are compliant with deadline needs of education statistics; there are follow up procedures for ensuring compliance; education data is provided within six months after the end of the school year to other source providers
3.4	**Other data sources, such as censuses, surveys, and administrative records, are routinely assessed**	Source data are not audited; information on sampling errors and imputed data are not documented or unavailable	Source data are rarely audited; information on sampling errors and imputed data are not documented or unavailable	Source data are routinely audited; information on sampling errors and imputed data are rarely documented or shared.	Source data are routinely audited; information on sampling errors and imputed data are documented and shared.	Source data are routinely audited; information on sampling errors and imputed data are documented and statistics staff are trained to handle these issues.
3.5	**Data compilation employs sound statistical techniques to deal with data sources. Score absent conditions in descending order. Explain in the comments.**					For survey data: Random sampling; appropriate sample size. For census data: updated registry of all schools (public, private) exists to identify responding and non-responding schools
3.6	**Other statistical procedures (data editing, transformations and analysis) employ sound statistical techniques**	No data adjustments made when needed	Some data adjustments and transformations made but not documented	Data adjustments and transformations made but not documented; statistical methods used in data transformation not to international standards	Data adjustments and transformations made but not documented; sound statistical methods used in data transformation	Data adjustments and transformations documented; sound statistical methods used in data transformation

3.7	**Intermediate results are validated against other information where applicable**	Intermediate results are not validated against other information where applicable	Intermediate results are rarely validated against other information where applicable	Intermediate results are sometimes validated against other information where applicable	Intermediate results are validated most of the time against other information where applicable	Intermediate results are always validated against other information where applicable
3.8	**Statistical discrepancies in intermediate data are assessed and investigated**	Statistical discrepancies in intermediate data are not assessed and investigated	Statistical discrepancies in intermediate data are rarely assessed and investigated	Statistical discrepancies in intermediate data are assessed and investigated sometimes	Statistical discrepancies in intermediate data are assessed and investigated most of the time	Statistical discrepancies in intermediate data are always assessed and investigated
3.9	**Statistical discrepancies and other potential indicators or problems in statistical outputs are investigated**	There are no systematic processes (check demographic data; check previous years) in place for monitoring errors and omissions	There are systematic processes (check demographic data; check previous years) in place for monitoring errors and omissions but they are rarely used	There are systematic processes (check demographic data; check previous years) in place for monitoring errors and omissions but they are not applied consistently	There are systematic processes (check demographic data; check previous years) in place for monitoring errors and omissions but results are not made public	There are systematic processes (check demographic data; check previous years) in place for monitoring errors and omissions and the results are made public
3.10	**Studies and analyses of revisions are carried out routinely and used internally to inform the processes**	Revisions to methodology are rarely or never made	Methods are reviewed; No assessments of preliminary vs. revised data are made.	Methods are reviewed; preliminary vs. revised data are assessed; no feedback loop implemented; findings are not made public	Methods are reviewed; preliminary vs. revised data are assessed; feedback loop implemented; findings are not made public	Methods are reviewed; preliminary vs. revised data are assessed; feedback loop implemented; findings are made public
4	**Serviceability**					
4.1	**Periodicity follows dissemination standards**	Census of enrolment, teachers, schools and financial data are only produced every 5 or more years.	Census of enrolment, teachers, schools and financial data are produced every 2-5 yrs.	Census of enrolment, teachers, schools and financial data are produced every 2 years.	Census of enrolment is annual but census of teachers, schools and finances are not produced annually.	Census of enrolment, teachers, schools and financial data are produced annually

4.2	**Timeliness follows international dissemination standards**	Administrative school census data are available 6-12 months after the end of the school year	Administrative school census data are available 0-6 months after the end of the school year	Administrative school census data are available 6-12 months after the initiation of the school year	Administrative school census data are available 2-6 months after the initiation of the school year	Administrative school census data are available 2 months after the initiation of the school year
4.3	**Statistics are consistent within the dataset**	No consistency or cross checking done on the data	Consistency checking done only for enrolment data and there is no cross-checking	Consistency checking done only for enrolment data and cross-checking done regularly	Consistency checking done only for administrative census data and cross-checking done regularly	Consistency checking done for all data and cross-checking done regularly
4.4	**Statistics are consistent or reconcilable over a reasonable period of time**	Time series are available for less than 5 years; there are no procedures for revision of time series	Time series are available for less than 5 years; there are procedures for revision of time series; the revision methods are not public, and inconsistencies are not explained	Time series are available for more than 5-10 years; there are procedures for revision of time series; the revision methods are not public, and inconsistencies are not explained	Time series are available for 5-10 years; there are procedures for revision of time series; the revision methods are public, and inconsistencies are explained	Time series are available for more than 10 years; there are procedures for revision of time series; the revision methods are public, and inconsistencies are explained
4.5	**Statistics are consistent or reconcilable with those obtained through other data sources and/or statistical frameworks**	Percent difference in primary and secondary education enrollment between school-reported figures and data from HH surveys is larger than 30 percent points.	Percent difference in primary and secondary education enrollment between school-reported figures and data from HH surveys is between 21-30 percent points.	Percent difference in primary and secondary education enrollment between school-reported figures and data from HH surveys is between 11-20 percent points.	Percent difference in primary and secondary education enrollment between school-reported figures and data from HH surveys is between 5-10 percent points.	Percent difference in primary and secondary education enrollment between school-reported figures and data from HH surveys is lower than 5 percent points.

4.6	**Revisions follow a regular and transparent schedule**	There are no revisions	There are ad hoc partial formal revisions of provisional estimates, methods, and outputs. Documentation available to a restricted group	There are annual partial formal revisions of provisional estimates, methods, and outputs. Documentation available to a restricted group	There are documented formal revisions of provisional estimates, methods, and outputs every two years	There are documented annual formal revisions of provisional estimates, methods, and outputs
4.7	**Preliminary and/or revised data are clearly identified**	No preliminary data are produced	Preliminary and/or revised data are not identified	Preliminary and/or revised data are clearly identified but only a portion is made public	Preliminary and/or revised data are clearly identified but not made public	Preliminary and/or revised data are clearly identified in public documents
5	**Accessibility**					
5.1	**Statistics are presented to facilitate proper interpretation and comparisons (layout, clarity of texts, tables, and charts)**	No presentation of data outputs	Data are not presented clearly	Clear presentation of data; charts have no underlying data available; disaggregation of data are not presented	Clear presentation of data; charts have underlying data available; disaggregation of data are not presented	Clear presentation of data; charts have underlying data available; disaggregation of data are possible
5.2	**Dissemination media and format are adequate**	During the last 5 years, data were not available electronically and there is no yearbook ready for dissemination	Data are not available electronically but there is a yearbook ready for dissemination	During the last year, data were available electronically and there was a yearbook ready for dissemination	During the last 2-4 years, data were available electronically and there was a yearbook ready for dissemination	During the last 5 years, data were available electronically and there was a yearbook ready for dissemination
5.3	**Statistics are released on a pre-announced schedule**	Data are not released	There is no pre-announced schedule for data release	There is a pre-announced schedule for data release and the data are released >6 months later	There is a pre-announced schedule for data release but the data are released 0-6 months later	There is a pre-announced schedule for data release and the data are released accordingly
5.4	**Statistics are made available to all users at the same time**	No data are released	Some of the data are released to restricted users	Most of the time part of the data are released to all users simultaneously	Most of the time all of the data are released to all users simultaneously	All data are released at the same time to all users

5.5	**Statistics not routinely disseminated are made available upon request**	Release of non-published data may compromise confidentiality	Release of non-published data and non-confidential data is without controls	Release of non-published data and non-confidential data is discretionary	There are procedures in place for releasing non-published data and non-confidential data to a restricted group	There are procedures in place for releasing non-published data and non-confidential data
5.6	**Documentation on concepts, scope, classifications, basis of recording, data sources, and statistical techniques is available, and differences from internationally accepted standards, guidelines, or good practices are annotated**	No metadata is available	Metadata, including information on concepts, definitions, classifications, sources, methodology and statistical techniques is incomplete and outdated	Metadata, including information on concepts, definitions, classifications, sources, methodology and statistical techniques are documented, but outdated and available upon request	Metadata, including information on concepts, definitions, classifications, sources, methodology and statistical techniques are documented, updated and available upon request	Metadata, including information on concepts, definitions, classifications, sources, methodology and statistical techniques are documented, updated and available to public
5.7	**Levels of detail are adapted to the needs of the intended users**	No data catalog is produced	Data catalog is available to selected users	Data catalog is available so users can request detail of data according to their needs. Catalog is not updated annually but selected users have access to data	Data catalog is available so users can request detail of data according to their needs. Catalog is updated annually but just selected users have access to data	Data catalog is available so users can request detail of data according to their needs. Catalog is updated annually and data is accessible to users
5.8	**Contact points for each subject field are publicized**	Statistical releases do not identify contact person	Most statistical releases identify contact person in case of required assistance. No data manuals and/or brochures are produce to educate users and assistance to users is not monitored	All statistical releases identify contact person in case of required assistance. Limited and hard to obtain data; Manuals and/or brochures are produced to educate users and assistance to users is not monitored	All statistical releases identify contact person in case of required assistance. Data manuals and/or brochures are produced to educate users and assistance to users is not monitored	All statistical releases identify contact person in case of required assistance. Data manuals and/or brochures are produced to educate users and assistance to users is monitored though periodic surveys

5.9	Catalogs of publications and other services, including information on any charges, are widely available	Catalogues of publications and service are not available	Catalogues of publications and services are available but not updated yearly. Prices of statistical products and services are not clearly disclosed	Catalogues of publications and services is available and updated yearly. Prices of statistical products and services are not clearly disclosed	Catalogues of publications and services are available and updated yearly. Prices of statistical products and services are clearly disclosed but assistance for placing orders is not available	Catalogues of publications and services is available and updated yearly. Prices of statistical products and services are clearly disclosed and assistance for placing orders is available

Annex 2. SABER EMIS Assessment Tool Scorecard

	Aspect of Quality	Score	Comments
0	**Prerequisites of quality**		
0.1	Responsibility for collecting and disseminating education data is clearly specified		
0.2	Data sharing and coordination among different agencies are adequate		
0.3	Individual/personal data are kept confidential and used for statistical purposes only		
0.4	Statistical reporting is ensured through legal mandate and/or measures to encourage response		
0.5	Staff, facilities, computing resources, and financing are commensurate with the activities		
0.6	Processes and procedures are in place to ensure that resources are used efficiently		
0.7	Education statistics meet user needs and those needs are monitored continuously		
0.8	Processes are in place to focus on quality		
0.9	Processes are in place to monitor the quality of data processes		
0.10	Processes are in place to deal with quality considerations in planning the stat program		
0.11	Mechanisms exist for addressing new and emerging data requirements		
1	**Assurances of integrity**		
1.1	Statistics are produced on an impartial basis		
1.2	Professionalism of staff is actively promoted		

	Aspect of Quality	Score	Comments
1.3	Choices of data sources and statistical techniques are made solely by statistical considerations		
1.4	Agency is entitled to comment on erroneous interpretation and misuse of statistics		
1.5	Terms and conditions are available to the public		
1.6	Public is aware of internal governmental access to statistics prior to their release		
1.7	Products of education statics agency are clearly identified		
1.8	Advanced notice is given of major changes in methodology, source data, and statistical techniques		
1.9	Guidelines for staff behavior are in place and are well known to the staff		
2	**Methodological soundness**		
2.1	Overall structure, concepts and definitions follow regionally and internationally accepted standards, guidelines, and good practices		
2.2	Scope is in accordance with international standards, guidelines, or good practices		
2.3	Classification systems are consistent with international standards, guidelines, or good practices		
3	**Accuracy and reliability**		
3.1	Source data are obtained from comprehensive data collection that takes into account country-specific conditions		
3.2	Data are reasonably confined to the definitions, scope, classifications, and time of recording required		

	Aspect of Quality	Score	Comments
3.3	Source data are timely (6 months after event)		
3.4	Other data sources, such as censuses, surveys, and administrative records, are routinely assessed		
3.5	Data compilation employs sound statistical techniques to deal with data sources		
3.6	Other statistical procedures (data editing, transformations, and analysis) employ sound statistical techniques		
3.7	Intermediate results are validated against other information where applicable		
3.8	Statistical discrepancies in intermediate data are assessed and investigated		
3.9	Statistical discrepancies and other potential indicators or problems in statistical outputs are investigated		
3.10	Studies and analyses of revisions are carried out routinely and used internally to inform the processes		
4	**Serviceability**		
4.1	Periodicity follows dissemination standards		
4.2	Timeliness follows international dissemination standards		
4.3	Statistics are consistent within the dataset		
4.4	Statistics are consistent or reconcilable over a reasonable period of time		
4.5	Statistics are consistent or reconcilable with those obtained through other data sources and/or statistical frameworks		

	Aspect of Quality	Score	Comments
4.6	Revisions follow a regular and transparent schedule		
4.7	Preliminary and/or revised data are clearly identified		
5	**Accessibility**		
5.1	Statistics are presented to facilitate proper interpretation and comparisons (layout, clarity of texts, tables, and charts)		
5.2	Dissemination media and format are adequate		
5.3	Statistics are released on a pre-announced schedule		
5.4	Statistics are made available to all users at the same time		
5.5	Statistics not routinely disseminated are made available upon request		
5.6	Documentation on concepts, scope, classifications, basis of recording, data sources, and statistical techniques is available, and differences from internationally accepted standards, guidelines, or good practices are annotated		
5.7	Levels of detail are adapted to the needs of the intended users		
5.8	Contact points for each subject field are publicized		
5.9	Catalogs of publications and other services, including information on any charges, are widely available		