Reinforcing Capacity for Economic Statistics in Africa, Perspectives on Building Statistical Infrastructure for Business Statistics

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Perspectives on Building Infrastructure for Business Statistics

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Abstract

Developing countries with limited statistical capacity face important challenges in meeting priority information needs and must maximize opportunities to advance these objectives. It is critical that resources are leveraged effectively, country needs are prioritized, and activities carefully staged for maximum benefit. Streamlined, sustainable solutions can help reinforce ongoing capacity for meaningful economic statistics, laying a robust foundation for evidence-based decision making in Africa. This paper will explore strategies underway at the World Bank in partnership with statistical offices in West Africa. These include investing in simplified instruments and automated tools, for example, for sampling, questionnaire design and editing, within a streamlined process design. The paper will conclude with perspectives on strategies to advance capacity for business statistics in Africa, and reflections on increasing the relevance of statistical standards for countries with limited capacity.

Contents

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Background/context

Developing countries with limited statistical capacity face important challenges meeting national information needs and achieving compliance with required international statistical standards. Consequently, they must maximize opportunities to access technical assistance to advance these objectives. It is critical that these resources are leveraged effectively, that country needs are prioritized, and activities carefully staged for maximum benefit. Streamlined, sustainable solutions are needed to reinforce the ongoing capacity for meaningful economic statistics and to establish a feasible progression towards compliance with standards, laying a robust foundation for evidence-based decision-making in Africa.

To support the twin policy goals of eliminating poverty and promoting shared prosperity, the World Bank has made considerable investments in statistical capacity building[2] over the last 20 years. These have exceeded $1 billion in grants and loans over the past two decades and encompassed a variety of projects across many domains aligned with National Strategies for the Development of Statistics (NSDS). Project activities aimed to strengthen statistical policy and institutional frameworks, mechanisms for efficient management and coordination, statistical infrastructure, operations and procedures, human resource development, and physical infrastructure and equipment.

While statistical capacity building has traditionally focused on household surveys and national accounts in World Bank client countries, the feasibility of offering technical assistance in collecting and processing business statistics has more recently been explored. In addition to providing the needed statistical infrastructure and input data for national accounts, these efforts support other information needs at the World Bank[3] requiring firm-level data obtained through business censuses, surveys, and administrative data.

This paper will explore strategies underway at the World Bank in partnership with National Statistical Institutes (NSIs) to develop modern approaches to business registers, business demography, and the basic collection and compilation of economic statistics. The approach integrates simplified methods, instruments, and automated tools, for example, for sampling, digital questionnaire design, industry coding, and editing, within a streamlined process design, generalized for use in a variety of languages and institutional settings.

The paper will begin by providing an overview of initial work to assess the feasibility of World Bank efforts to provide viable technical assistance in this area. The next section will describe the overall

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[2] More information on the programs and initiatives that focus on building statistical capacity of countries can be found here.

[3] For instance, the World Bank Group's Finance, Competitiveness & Innovation Global Practice (FCI) combines expertise in the financial sector with expertise in private sector development to foster private sector led growth and help create markets in client countries. Within countries, FCI works with governments to create an enabling environment where financial stability, access to finance and risk management provide a foundation to crowd-in private sector investment, create capital markets, and accelerate equitable growth. At the same time, the practice is focused on identifying firm- and industry-level constraints to deliver reforms which can drive growth and accelerate job creation (including access to finance, innovation, special economic zones, industry solutions, entrepreneurship, etc.). Boosting firm-level efficiency and productivity centers on adopting better technologies, including digital ones. More information can be found at the FCI webpage.

approach, which is anchored in *Lean* principles[4]. A subsequent section will outline specific challenges throughout the stages of the statistical process and show how rule-based tools can be designed to address them. Focus will be given to a tool designed for industry coding to illustrate the advantages gained via this approach. The paper will conclude with reflections on next steps and potential implications for the international community.

Exploring the feasibility of building capacity in business statistics

In late 2018, the World Bank embarked on the *Economic Surveys and Firm Level Data* project aimed to strengthen the capacity of countries to successfully undertake economic (establishment/enterprise) censuses and surveys and to build and maintain statistical business registers supplemented with administrative data sources.

According to a study by the African Development Bank[5], while a clear majority of 51 countries surveyed had undertaken an economic survey or census in a recent year, a large number were unable to sustain the regular activity required for meaningful ongoing measurement. Only 27 countries update their SBR on an annual basis, and 24.5% of countries surveyed only update their SBR when new information becomes available. The study provided clear evidence that many African countries struggled to maintain a comprehensive, up-to-date statistical business register. The absence of this fundamental statistical infrastructure has serious implications for data quality in subsequent survey sampling and grossing up of estimates, restricts the relevance of current statistics on business demography, and constrains the quality and coverage of macroeconomic data from the national accounts.

Over the length of the project, which ended in 2021, technical assistance was provided to approximately 15 primarily West African countries. The intensity, frequency, and impact of activities were targeted to local needs, capacity, and relevance for participating NSIs. Examples of countries participating in either training or technical assistance to support business survey infrastructure or operations include Angola, Bhutan, Burundi, Cameroon, Gabon, Ghana, Guinea, Ivory Coast, Liberia, Nigeria, Peru, Sierra Leone, and Tanzania.

On-the-ground missions remained feasible until the Spring of 2020 when travel restrictions required a change in strategy with the onset of the COVID-19 pandemic. While virtual missions could be effective in certain circumstances, substantial effort was redirected to developing methods and training materials to support best practices in countries with limited resources and statistical capacity. In addition, in support of the methodologies, automated tools were developed for generalized implementation within a larger, holistic approach based on modern methods and anchored in *Lean* principles.

The pilot exploration of providing support on economic surveys and firm-level data led to a deeper understanding of the critical need for ongoing investment in this area to support meaningful economic measurement. It also revealed a striking potential for improvements to data quality, timeliness, and cost-

[4] Lean is about creating flow and eliminating waste. The concept and implementation of lean principle are explained in this document by the European Commission.

[5] The report on the evaluation of the economic statistics measurements in Africa conducted by the African Development Bank in 2014 is available here.

effectiveness that can be gained with the systematic implementation of simple, automated rules-based processes, along with strengthening the sustainability of measurement within NSIs on an ongoing basis.

Best practices in *Lean*, integrated processes to address statistical challenges

Challenges faced by African National Statistical Institutes

Many World Bank client countries in Africa face a myriad of profound obstacles and challenges, including extreme poverty, political instability, and civil war. Not surprisingly, they struggle to prioritize statistical development and often rely on assistance from a range of international partners to support the economic measures required to monitor progress, inform development efforts, and support local policy needs.

NSIs in these settings typically have limited resources, but face urgent pressures for immediate statistical outputs, for example, for required national accounts datasets or price measurement. Distinct technical assistance and capacity building initiatives may come from a variety of organizations, and despite efforts to coordinate, direction and support may not always be aligned, resulting in duplication of effort. This can result in a fragmented measurement system, as multiple funders support discreet activities associated with specific information needs, and contribute to instability within the NSIs themselves, who often suffer from staff shortages and high turnover of younger, talented staff.

Together with infrequent survey activities, a significant lack of institutional memory exists within NSIs. Data that exists in NSIs is sometimes not published or otherwise accessible, and important datasets are not properly archived, and multiple undocumented versions are circulating. All these factors impact time series continuity and the general accuracy of resulting economic indicators, in turn eroding trust among key users and limiting the potential to develop the needed culture of evidence-based decision making

In addition to these typical challenges and pitfalls, efforts in the pilot project for *Business Statistics and Firm Level Data* revealed that, because opportunities for business survey and census collection are limited, survey content is often overloaded to meet multiple objectives with a single survey vehicle, resulting in overly ambitious census and survey objectives, sub-optimal questionnaire design, poor response rates and important data quality constraints.

Furthermore, the front end of the survey process (questionnaire design, sampling, and stratification) is typically over-emphasized compared to the intermediate stages of collection, capture, cleaning, and processing, and there is often limited understanding of the magnitude and nature of resources required to successfully undertake these elements to ensure high quality and timely outcomes. As a result, funding is often inadequate to appropriately support these processes, which are predominantly undertaken by NSI staff.

In the case of business statistics, statistical offices often rely on traditional methods (paper questionnaires, manual data capture) and are typically not well advanced in automated processes. While modern methods and IT solutions can contribute to important gains, the required shift in

"mindset" away from a detailed bookkeeping approach to more transparent and reproducible processes for NSIs that are based on sound statistical principles can, in practice, be challenging to achieve and requires additional guidance.

Finally, while international statistical frameworks and classifications aim to be applicable in a range of institutional settings, they are not always well-adapted to countries with limited capacity, and countries may not have developed required prerequisites for their implementation and thus may be left behind.

Meanwhile circumstances in these countries also differ in relation to more advanced economies, requiring different measurement strategies. An important issue pertains to the informal sector, which generally constitutes a more important share of the economy in relation to higher income countries. Identification of informal units for census and survey activities, ideally segmented by industry, can be achieved by training enumerators to leverage widely available tools. For example, photo examples, or the use of "street view" in Google maps can provide required evidence of the existence and location of unregistered units, improving overall coverage and quality. Furthermore, in the case of an economic census, statistical methods can be used to canvas the informal sector in detail in specified areas and extrapolate findings to other, similar areas via the use of "meso" records included on the business register. These records can help ensure better estimate employment, providing crucial intelligence to ensure appropriate coverage at the grossing up and weighting stages.

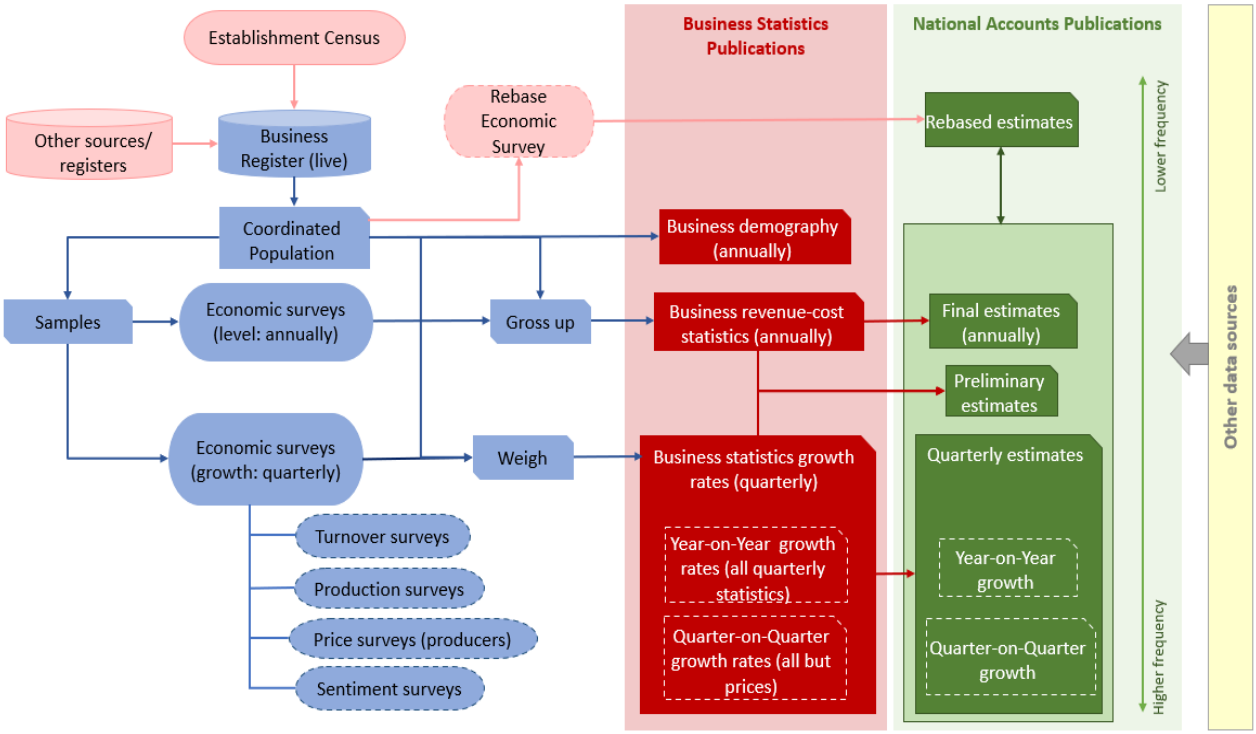
As the discussion above illustrates, this group of countries with limited statistical capacity could benefit from practical, tailored guidance to support staged roadmaps for statistical development[6], from very basic, rudimentary statistical programs to more highly sophisticated and elaborated systems in well-resourced economies.

The need for standardized, sustainable solutions and an integrated approach

Figure 1 provides an overview of a typical generic work program for business statistics, anchored to a statistical business register and containing elements such as economic censuses and annual and quarterly business surveys. These are used to generate statistics often published initially as business statistics and ultimately used, along with other data sources, in the national accounts compilation process.

[6] An example is the Generic Statistical Business Process Model (GBSPM) which in itself is a rich toolkit, but needs knowledge, experience, and sufficient empowerment to identify the most essential steps and their optimal sequencing.

Figure 1: Business Statistics - Generic Work Program



The development of a viable ongoing statistical program is a continuous challenge of balancing costs, timeliness, and data quality. The lesser the knowledge, experience, and available resources, the more important it is to work with simple and transparent processes, instruments, and tools. Designing such processes requires a holistic understanding of the entire interconnected process, from identifying metadata to disseminating statistics, along with a knowledge of potential pitfalls and opportunities often lacking in these institutional settings. Finding the workable compromises needed in these settings is often beyond the capability of staff, who may not feel sufficiently empowered to go beyond established parameters. Obstacles to developing the required knowledge and expertise within NSIs must be overcome to achieve stable and sustainable programs for high-quality official statistics

Given their limited capacity, countries need support in designing statistical processes, ideally supported by tools that allow them to produce high-quality statistics at low cost, irrespective of the targeted dataset. In particular, practical support is needed at the data processing stage, which is equally important to data collection but more challenging from both a conceptual and a practical perspective. As noted, sufficient attention and resources are often lacking for this phase.

NSI's in developing countries could also benefit from a maturity grid or similar system to support developing priorities and work plans for business statistics and related infrastructure. To develop such guidance, the value added of different statistical activities (censuses, administrative data, SBRs, economic surveys) must be considered and planned effectively so that time and budget invested deliver

the best value[7]. In many countries, for urgent policy purposes, dedicated Covid-19-related surveys were needed to measure the impact of Covid-19 on business activities. If an adequate but simple work program on business statistics were available, including turnover and volume (production) indices, this alone would have allowed for a better understanding of the decline and revival of firms as well as specific industries benefiting from the Covid-19 pandemic.

This paper argues that to improve economic measurement in developing countries, modern methods and tools must be implemented. The strength and uniqueness of this approach is that it combines experience, methods, and standard tools for an integrated "turnkey" solution, within a holistic framework that considers the entire statistical process. This solution is robust, agile and scalable in terms of the resources and time required and ensures needed quality targets can be met and enhanced over time, as staff experience and historical data accumulates.

The approach focuses on the statistical business register as a key foundational infrastructure for economic statistics and the design of sustainable statistical processes.

An illustration of *Lean* principles

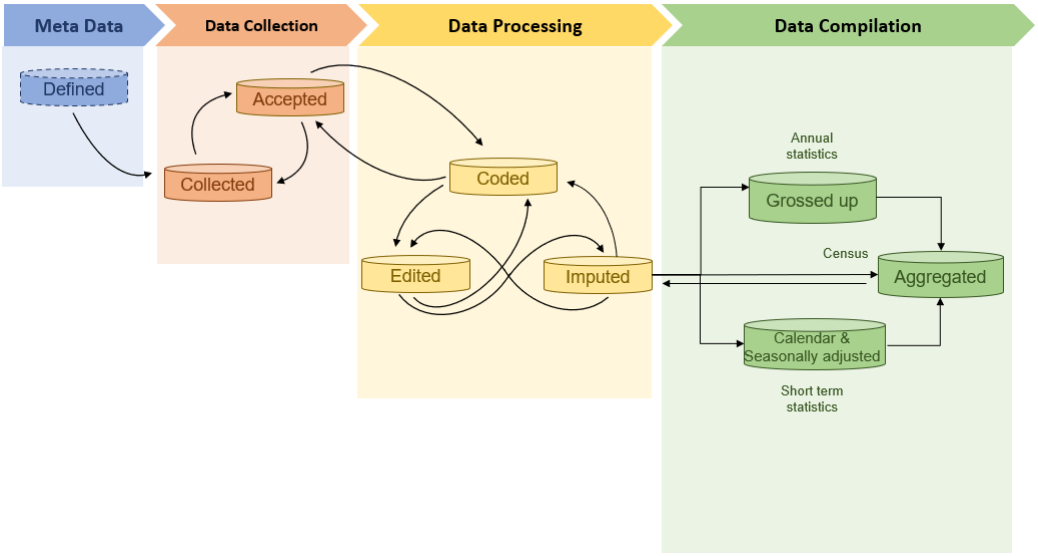
In the case of business statistics, the operations of NSIs can be viewed as similar to that of manufacturing entities. They collect raw materials in the form of administrative data and survey responses and transform them into outputs in the form of objective and meaningful official statistics. As with other producers, important performance indicators relating to the production process include costs, timeliness, quality, and other factors that may influence them. Entrepreneurs and scientists have long considered the optimal division and coordination of work. In this paper, a number of approaches are combined in what can be termed the *Lean Design of Statistical Processes*.

The business statistics process design used to support World Bank client countries has the following key elements:

1. Clearly defined versions of data at specific points in the process **(steady stages).**
2. Between each stage, **specified transformations** that add value to inputs from the previous stage to produce an output for the next stage.
3. To the extent possible, the transformation process at each stage is **rule-based and automated**.
4. The overall process is **iterative**. It first addresses the most obvious issues, then gradually resolves smaller or harder-to-detect issues.
5. A key feature of the process is strong **integration among the different phases**.

[7] An example is the use of Value Added Tax (VAT) data, as this limits available detail in terms of statistical entities and the nature of their activities, sometimes requiring survey activity to be simplified.

Figure 2: Use of steady stages

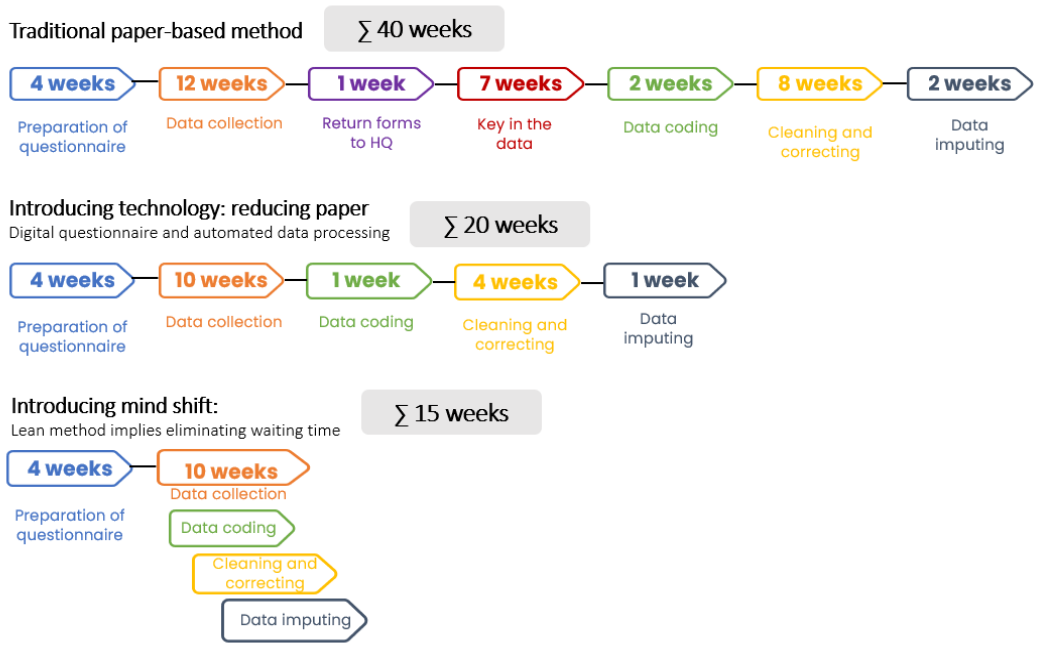


So, to illustrate, during the data collection phase, most other phases can be initiated, providing preliminary results for analysis and an important feedback loop to interviewers or registry holders. This serves to optimize outcomes for continuous improvement throughout the iterative process.

<u>An illustration of gains to be achieved</u>

As an illustrative example of what can be achieved via the application of *Lean* methods and automated tools, Figure 3 shows how timeliness and quality can typically be improved from traditional methods, following the progressive implementation of *Lean* principles in the form of automation and rule-based tools.

Figure 3: Introducing Lean collection and processing



The basic principles of the ***Lean*** approach[8] are as follows:

1. **Value**: Define critical user needs.
2. **Value stream**: Determine the critical steps in the process and eliminate "waste", in terms of, for example, unused capacity, waiting time, or unneeded output.
3. **Flow:** Create a constant flow with quality feedback.
4. **Pull**: Deliver results based on demand of users.
5. **Perfection**: Continuously improve the process.

In applying *Lean* principles, starting with a traditional paper-based method, the overall time required for the collection and processing stages is approximately 40 weeks, given the lengthy logistical processes in handling and processing paperwork and digitizing results. In this case, each additional processing step is also a potential source of error, with the risk of human error in data entry and potential loss of information that may not be correctly transcribed.

The introduction of digital questionnaires brings a number of important advantages, including significant time savings in data collection, while the steps of handling paper questionnaires and data entry to digitize them are eliminated entirely. Digital capture also results in fewer quality risks, and quality controls are built in as features of the digital questionnaire. As a result, editing time is also reduced, and results are of higher quality. The introduction of digital questionnaires alone cuts the overall time required for collection and processing in half to approximately 20 weeks.

In a third scenario incorporating a shift in "mindset" to align with *Lean* process design, waiting times are eliminated, and opportunities to improve quality are embedded iteratively throughout simultaneous and iterative processes, further reducing the overall time required to approximately 15 weeks. This demonstrates that moving to an integrated, iterative (as opposed to sequential) process using automated rule-based tools results in significant gains in terms of cost, timeliness, and data quality. Moreover, effort can be redirected to much-needed conceptual and analytical tasks, since time-consuming tasks for data editing and process documentation have been eliminated via automation.

World Bank support to business statistics

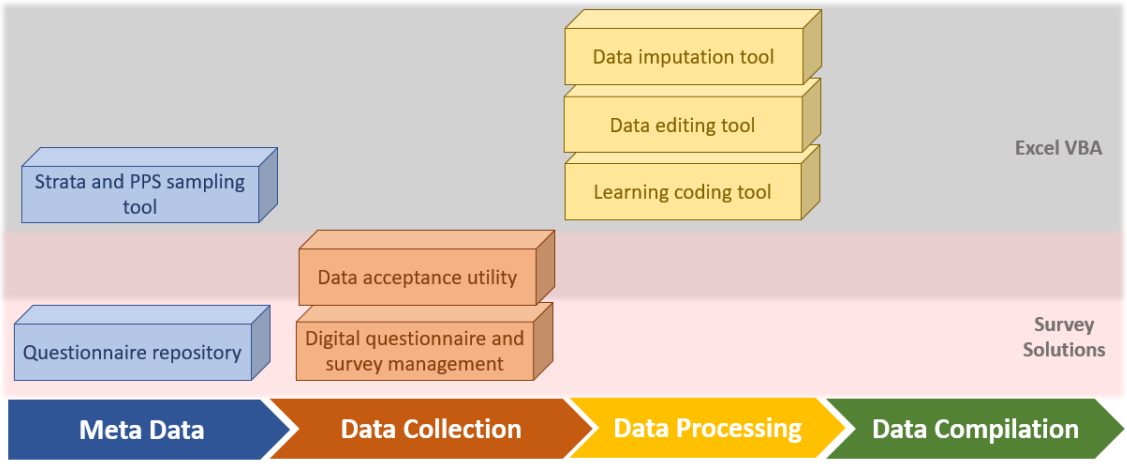
As part of its technical assistance and training program, the World Bank has developed a set of rule-based tools supporting essential statistical processes in business statistics. At the core of the toolset is the World Bank's *Survey Solutions* software suite[9], consisting of a digital questionnaire designer, testing functionality, and a comprehensive tool for data collection and survey management.

The motivation to develop rules-based methods and tools for the business statistics work program was to improve the efficiency of technical assistance work and the feasibility of working systematically in many countries. When the methods and tools matured via testing and implementation, sharing them

[8] The Lean Sigma Six Academy (LSSA) provides literature on the core lean principles through the development of accredited trained organizations and trainers and certification programs. The concept and implementation of lean principle are explained in this document by the European Commission.
[9] Please refer to the Survey Solution website to learn more about the application of the software.

with NSIs and integrating them into ongoing processes proved useful.

Figure 4: World Bank Standard tools supporting business survey processes



The standard methods and tools developed at various stages of the integrated process are summarized below. Outside of *Survey Solutions*[10], tools are developed in Visual Basic for Applications (VBA) in Excel, a widely available software, to facilitate implementation without the need for an elaborate IT set-up. More sophisticated versions (for example, in *R*) are under consideration for more efficient processing of large datasets where needed. Rulesets are separate from the datasets and the associated programs processing the rules, allowing for maximum transparency and flexibility in implementation. The tools focus on the first three stages of the process and do not address the compilation phase, which is more straightforward in business statistics. We recommended nonetheless that any needed grouping and aggregation processes be automated based on transparent and explicit rules.

Stage 1: Metadata

At the preliminary metadata stage, a **questionnaire repository** is in place to archive effective formulation of commonly used questions. As noted earlier, the quality of the data collected via an electronic questionnaire is assured via controls giving warnings to double-check implausible responses. Appropriate questionnaires prioritize key content requirements and are sequenced appropriately to ensure maximum response for important variables. They avoid open-ended questions as much as possible to reduce potential errors and the workload required to verify, code, and process survey responses.

A **sampling tool** is used to draw a stratified sample or a Probability Proportional to Size (PPS) sample from an established frame. The tool does not calculate optimal sample sizes. Instead, different parameters can be chosen to define the preferred sample size, which is often restricted by budgets or the availability of IT equipment. The tool draws the sample and summarizes the chosen methodology based on the method and parameters chosen. While defaults are geared towards smaller datasets and limited strata, the tool is scalable for use with large data sets and detailed stratification if needed. In

[10] Survey Solutions is a free publicly available tool that can be used for questionnaire design, data collection and survey management. For access, please register at https://designer.mysurvey.solutions/.

practice, NSIs are encouraged to rely on the random selection for sample representativeness or to limit strata to a workable number to avoid unnecessary complexity with a limited added benefit. It is also important to allocate a large portion of the sample to large enterprises, guaranteed by the PPS method, and to those expected to have different levels, structures, or behavior within a required grouping.

Stage 2: Data collection

In the data collection process, there are 3 control phases: controls that are triggered in the questionnaire itself, (preferably automated) triggers, in the accept/reject phase, and automated rules during the editing phase.

Using **digital data collection**, the clearance of accepted data can be undertaken daily using an automated ruleset. A crucial example is whether the provided description of the main activity is adequate to determine the appropriate industry classification. Feedback is generated automatically for enumerators or respondents to address issues immediately as they arise.

Stage 3: Data processing

Coding

High-quality industrial coding is a key processing challenge, critically important for the next steps in the statistical process, including the compilation and publication stages.

An **industry coding tool** has been developed for industry classification that can be used in support of manual coding or a fully automated mode. When used for manual coding, it speeds up the process by suggesting likely or frequently used codes and offers the functionality to navigate quickly and transparently through the classification categories. In fully automated mode the tool assigns codes to hundreds of records per minute, with the success rate depending on the quality of the description of the main activity, the name of the enterprise, and other available variables.

The basic methodology is summarized in 6 steps**:**

1. *Remove trivials:* Remove unnecessary distorting characters
2. *Enlarge shorts:* Since keywords of at least 4 letters are required
3. *Correct spellings:* Correct spelling errors
4. *Interpret singles:* Address single words with insufficient context
5. *Redirect channels*: Convert to default keywords prior to coding
6. *Apply coding rules*: Link 4-letter keywords to ISIC codes

While the data coding tool is designed for industry classification of economic surveys or censuses, it is a generic learning tool that could also be applied to other classification challenges. More detailed examples using the coding tool will be provided in a later section, where it will be demonstrated that applying systematic, rule-based approaches to industry coding can lead to substantial quality gains.

Editing and imputation

For the editing phase, issues are reviewed, and either 1) accepted 2) solved, or 3) identified for imputation. The **editing tool** undertakes this exercise based on automated rules grouped in 7 categories summarized below:

1. *Overrules*: individual exceptional values are changed or identified for imputation.
2. *Reallocates*: addresses structural conceptual errors
3. *Identities*: checks totals against the sum of elements.
4. *Couples*: checks consistency for related variables
5. *Trivials*: determines the treatment of small values (accept, set to zero or impute)
6. *Outliers*: addresses values not falling within an expected range.
7. *Ratios/divisions:* addresses outliers in ratios (e.g., salary/employees or total revenue/total cost).

The editing tool tracks the number of outliers and other issues to adjust parameters in real-time and generates relevant para data to analyze the process.

For the **imputation tool**, variables to be imputed are first listed in the interface, and the preferred imputation sequence is determined based on assumptions on the quality and correlation of variables. For instance, starting with the imputation of employment is recommended (as this is the least sensitive and, therefore, most widely available), then costs, then revenues. After that, the system automatically calculates all potential imputation values and applies them in the indicated order to impute for missing or rejected values. Potential imputation values are generally calculated at the 4-digit ISIC (NACE or other system) level.

The imputation tool reports outliers, to support analysis, subsequent iterations, and ongoing improvements, allowing them to be traced back to specific industries and firms. The resulting analysis allows individual values to be overruled, industry codes corrected, parameters adjusted in the edit tool or new rules established.

Example of tools in action: A focus on industry coding

To further illustrate the potential of rules-based automated methods and tools, more specifics on the industry coding tool are provided in this section.

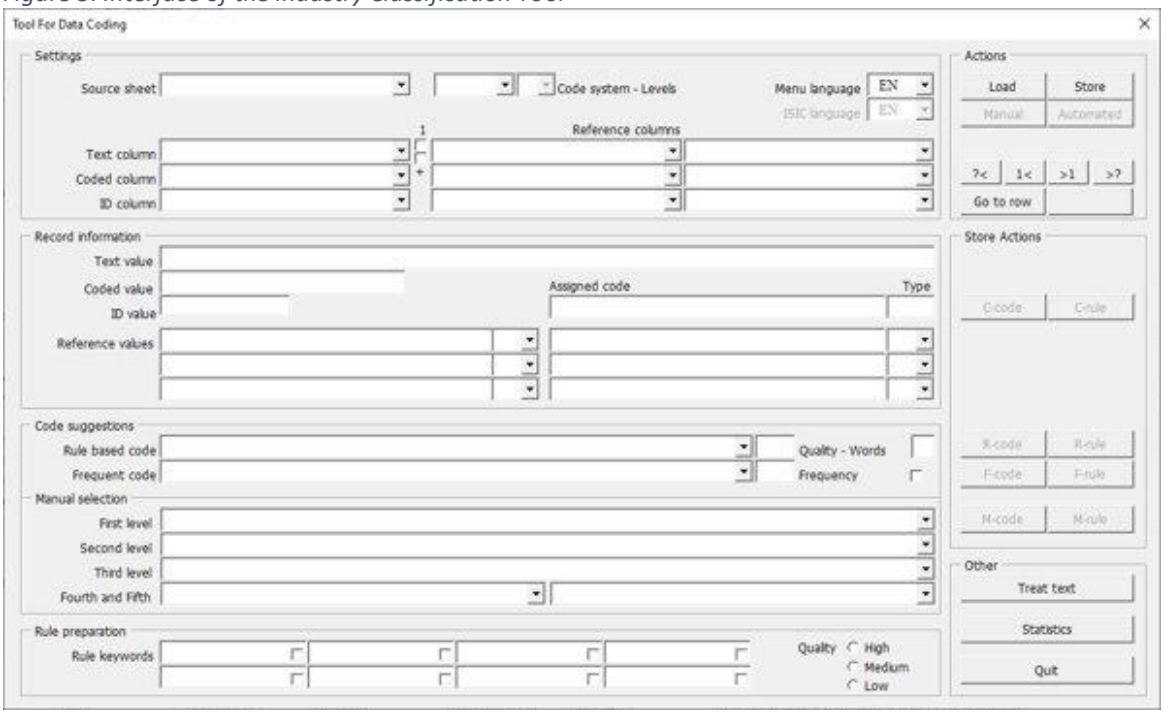
As noted above, automation brings many benefits, including objective decisions, timely, efficient processing, reproducible results, and a transparent and self-documenting process. It also comes with a number of challenges. A principal challenge for the industry coding tool is that to be broadly implemented, it must function in multiple languages. In this context, it must deal with a broad range of complexities associated with typical national or regional terminology, spelling errors, and the use of identical words in different contexts, and data quality issues.

The tool requires variables like main activity, name of the company, main product or similar, or a combination of these, and features a user-friendly multilingual VBA interface. It has been applied for data in over 10 languages, including, for example, Arabic and Khmer. As noted, it can be used in fully automated mode or facilitate manual coding, to validate existing classifications or to classify secondary activities. It combines the benefits of Microsoft Excel for data storage (simple, intuitive interface and filtering capability) and a dedicated software program for data processing. It generates para data and a log to monitor and evaluate the coding process. It houses an extended ruleset, where new rules can be added, or existing rules adjusted as needed. It can account for typical national

economic activities or local terminology to address specific classification challenges or nomenclature. Usage is scalable for large datasets, and tasks can be divided effectively.

The tool's interface is shown in Figure 5 below, and a manual has been developed to support client NSIs in its ongoing implementation.

Figure 5: Interface of the Industry Classification Tool

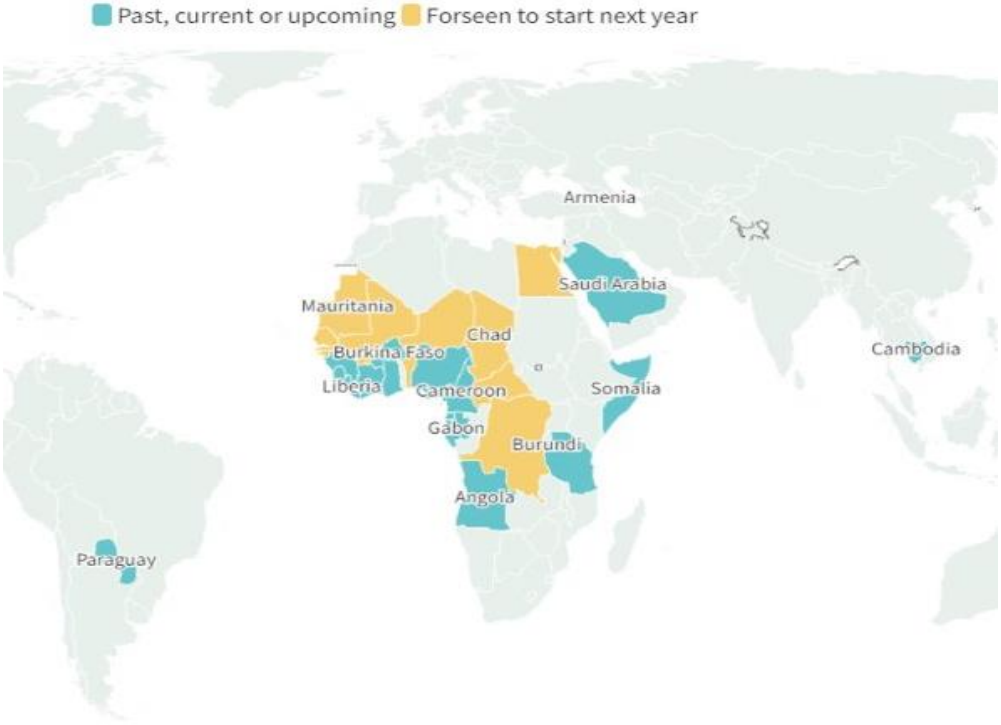


In terms of the overall method, the tool uses a combination of steps and rulesets to facilitate the industrial classification process. As noted, it can function in manual or automated mode.

An advanced mode is also available that uses additional variables in the dataset to refine industry assignment (for example, cost structure).

The tool has been used for approximately 50 countries in support of a range of statistical projects at the World Bank.

Figure 6: Countries where the tools are applied



To provide further illustration, examples of implementation experience in two selected countries in West Africa are provided below.

Country 1

In this case, a census and economic survey of approximately 90,000 units was undertaken, and manual classification led to implausible estimates. Using the industry coding tool, out of 88,258 records, 50,545 out of 80,529 were assigned the same 4-digit ISIC code as was the case with manual exercise. For the remainder, a comparison was made at the 1-digit level and where differences were identified, the largest firms were corrected manually, leading to higher quality estimates.

Country 2

In another example, a census and economic survey of over 1,100,000 entities were undertaken. Out of over a million records, about 10,000 were corrected or assigned an ISIC code. Many typical errors were identified and corrected (for example for pharmacies, tailoring services, or repairs) and a significant number of spelling errors could be easily resolved where erroneous phonetic spellings had been recorded.

Activities in course and future plans

At present, the approach, methods, and tools described in this paper are being introduced, used, tested, and improved in statistical capacity-building projects in NSIs across many regions. While the scale of effort must be aligned with available resources, countries with some form of active projects now include

Angola, Armenia, Burkina Faso, Cambodia, Equatorial Guinea, Gabon, Ghana, Guinea, Liberia, Paraguay, Sierra Leone, Saudi Arabia, Somalia, and Somaliland. A large new cooperation program in the planning stages will include Benin, Central African Republic, Democratic Republic of Congo, Cameroon, Chad, Gambia, Guinea-Bissau, Mali, Mauritania, Niger, and Senegal. Projects typically include economic censuses and annual economic surveys.

The ambition for these countries is to support the production of regular output while gradually building the sustainable statistical capacity required for robust methods, procedures and tools for data collection, processing, and the archiving of datasets.

For ongoing statistical development, short term and long-term tailored roadmaps for each country should ideally be developed, starting from documenting current circumstances and potential, and gradually building successive layers of modern, results-oriented statistical infrastructure.

In terms of further tool development, improvements are planned to extend language support of tools and instruments to languages with complex character sets, such as further expansion of Khmer and the introduction of Armenian. Improved manuals and methods in development will highlight the versatility of the tools. Furthermore, we expect to gradually develop better generic rulesets, allowing for further harmonization of data processing across a variety of global settings.

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