The United Republic of Tanzania

A HANDBOOK OF QUALITY GUIDELINES FOR STATISTICAL PRODUCTION IN TANZANIA

National Bureau of Statistics

Ministry of Finance

Dar-es-Salaam

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LIST OF ACRONYMS

CPI	Consumer Price Index
CSPro	Census and Survey Processing System
CSI	Customer Satisfaction Survey
DP	Development Partner
EDP	Electronic Data Processing
GDP	Gross Domestic Product
GNP	Gross National Product
HBS	Household Budget Survey
ICR	Intelligent Character Recognition
LGA	Local Government Authority
MDAs	Ministries, Departments and Agencies
MDGs	Millennium Development Goals
MKUKUTA	Mkakati wa Kukuza Uchumi na Kupunguza Umaskini Tanzania
MKUZA	Mpango wa Kukuza Uchumi na Kupunguza Umaskini Zanzibar
MCR	Mark Character Recognition
MSE	Mean Square Error
MTEF	Medium Term Expenditure Framework
NBS	National Bureau of Statistics
NER	Net Enrolment Ratio
NPES	National Poverty Eradication Strategy
NSO	National Statistical Office
NSS	National Statistical System
OCGS	Office of the Chief Government Statistician
OCR	Optical Character Recognition
PES	Post Enumeration Survey
PORALG	President's Office – Regional Administration and Local Government
SNA	System of National Accounts
SPSS	Statistical Package for Social Statistics
STATA	Statistical Software Package
TDHS	Tanzania Demographic and Health Survey
TNADA	Tanzania National Data Archive
TSED	Tanzania Socio-Economic Database
TSMP	Tanzania Statistical Master Plan

PREFACE

The National Bureau of Statistics (NBS) as a Government Agency is responsible for the production and dissemination of official statistics in Tanzania. In order to properly perform the activities, the Department of Statistical Methods, Standards and Coordination within the NBS has been producing guiding documents for use by statistical stakeholders within the National Statistical System (NSS). The documents include; *Concepts and Definitions for Production of Official Statistics*, *Statistical Methods, Standards and Guidelines for Producing Official Statistics and Quality Guidelines for Statistical Production* among others.

The main objective of the 'Handbook on Quality Guidelines for Statistical Production' is to provide guidelines for improving data quality within the National Statistical System (NSS).

This is the first publication of its kind to be produced by the NBS within the implementation process of the Tanzania Statistical Master Plan (TSMP). The TSMP has important components aiming at improving the Quality of Data, through strengthening the statistical infrastructure within the National Statistical System as an important pre-requisite for producing quality statistics.

The publication has three parts: Part One is on General Overview covering Background, Basic Processes of Statistics Production, Quality Concepts and Definitions of major Statistics. Part Two is on Quality Framework covering Introduction, Total Survey Error, Fitness for Intended Use and Survey Process Quality while Part Three is on Quality Inputs and Guidelines in Data Production Steps covering Introduction, Survey Coverage and Frames, Sample Design, Questionnaire Design, Translation of Survey Instruments, Interview Methods, Recruitment and Training of Enumerators/Supervisors, Pre-testing, Data Collection, Processing, Statistical Adjustment and Dissemination.

This document is subject to revision, through the provision of inputs from various statistical stakeholders within the NSS. The ultimate goal is to improve the quality of statistics. This is possible by putting in place sustainable Quality Assurance and Quality Control Systems at all stages of data production.

Last but not least, any comments for improving future publications are welcome.

Dr. Albina A. Chuwa
Director General.

PART ONE
GENERAL OVERVIEW

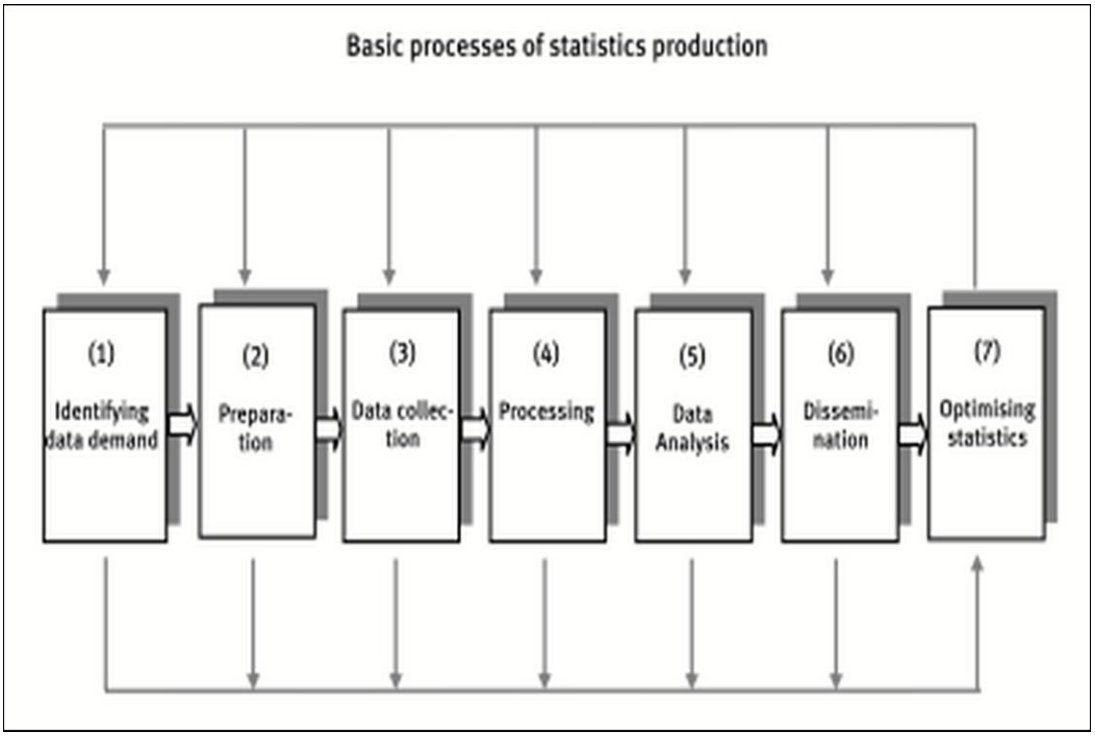
1.0 Background

The increase in demand for both traditional and development statistics for policy and development agenda has influenced the Government of Tanzania to review NBS's mandate and enable other data producers to facilitate informed decision-making process, through the provision of relevant, timely and reliable user-driven statistical information - *"official statistics"*. Careful decision has been made on how best to develop quality guidelines for data producers to be able to produce official statistics most effectively and efficiently across the whole National Statistical System.

In this regard, the National Bureau of Statistics (NBS) and the Office of the Chief Government Statistician (OCGS) of the Revolutionary Government of Zanzibar, have prepared a Handbook on Quality Guidelines for Statistical Production in Tanzania to be used by all data producers and users. The handbook addresses possible errors produced at all stages of data collection, processing and dissemination with possible measures to be undertaken to minimize them. This initiative is in line with the Tanzania Statistical Master Plan (TSMP) which aims at strengthening the National Statistical System so that quality statistics for decision making are made available objectively, in a coordinated manner, timely and cost effectively.

The main purpose of this handbook is to enhance data quality and efficiency to ensure that the statistics produced by all data producers are relevant, reliable and timely available and easily accessible within the NSS. In the NSS the National Bureau of Statistics is the central institution in Tanzania Mainland while in Tanzania Zanzibar, it is the Office of the Chief Government Statistician. Other key Ministries, Departments and Agencies (MDAs) that collect economic, social, demographic and environment statistics are the Ministries of Local Government; Agriculture, Food Security and Co-operatives; Livestock and Fisheries Development; Finance; Education and Vocational Training; Science and Technology; Labour, Employment and Youth Development; Water and Irrigation and Health and Social Welfare. Key agencies and departments include: Registration Insolvency and Trusteeship Agency; Bank of Tanzania; Tanzania Meteorological Agency; Tanzania Revenue Authority and Tanzania Police Force. Other ministries and institutions also collect, use and provide statistical information and form part of the NSS.

1.1 Basic processes of statistical production



Source: Quality Standards in German Official Statistics

1.1.1 Identifying data demand

This is usually done by establishing a dialogue between data users and data producers who are within and outside the National Statistical System so as to reach a mutual agreement on the way forward. National statistical offices identify emerging data demands through observations and contacts with many institutions and groups that are relevant to society. If such demands cannot be met by means of the existing data, official statistics submit proposals as to how the problem might be solved. This often includes conducting a new survey to cover the new data demand depending on the availability of resources.

For example in 1997, when the Government adopted the National Poverty Eradication Strategy (NPES), an idea emerged to have a data collection system for monitoring poverty trends in the country. The aim of the NPES was based on the goals of vision 2025 and took into account the Millennium Development Goals (MDGs) to reduce poverty, hunger, diseases, illiteracy, environmental destruction and put emphasis on empowering vulnerable groups in the country like women, children etc. The monitoring process required relevant data that could be collected, processed and disseminated.

1.1.2 Preparation

Based on the identified data demand, main activities for data collection are prepared. This includes: participating in the development of the legal basis by giving advice and comments, defining the group of respondents and obtaining their consent, confidentiality, implementing the survey mode and variables in a questionnaire and performing the relevant tests, sample planning, budgeting of resources, selection of the survey method, preparing for data processing, and data analysis as well as dissemination. Conducting stakeholders' meetings/workshops for identifying types of questions needed to capture the required indicators are among moves aimed at minimizing the possibility of collecting irrelevant data.

1.1.3 Data collection

This phase covers the practical steps of data collection through field work or using administrative data/records, including the technical-organizational preparations like recruiting qualified and well trained data collectors. Thereafter, collection of data is done in accordance with the established data collection instruments such as questionnaires, instruction manuals and control forms for controlling movements of materials at all stages of the data collection exercise. Data collection is done under close supervision in order to ensure that the survey operation is done properly and statistics produced are of good quality.

1.1.4 Data processing

Data processing is done through several stages, starting with manual editing and coding of questionnaires received from respondents, followed by data entry then data control and computer editing through relevant computer programs. For further processing, the data are brought into a form allowing Electronic Data Processing (EDP) and errors are eliminated through corrections. Plausible data are expanded or weighted in case of sample surveys. Finally, the data are tabulated and made available for further evaluations.

1.1.5 Data analysis

The main steps in this process are further processing of the statistical results to form overall systems, documenting the surveys and their data quality, as well as analysing and interpreting the data. This must be done by ensuring that socio-economic indicators such as Gross National/Domestic Products, Consumer Price Indices and Net Enrolment Ratios which are useful for measuring development outcomes are revealed.

1.1.6 Dissemination

Dissemination of statistical information is the last step after the collection and analysis activities in order to ensure that the produced statistics are used for planning and decision making processes at different administrative levels from National, Regional, District and down to lower administrative levels such as Wards and Villages. Statistical information is disseminated to stakeholders in various forms of publications including hard copies, soft copies, in discs and by posting on the websites. In order for the results to be user-friendly, charts, tables and relevant attachments are normally included. Dissemination is normally based on marketing concepts of the statistical offices. Depending on customer interest, and in line with the marketing model, the statistical information is offered as free basic provision, as standard products or as customer-specific processing.

1.1.7 Optimizing statistics

Main goal is the continuous improvement of data quality and an increase in efficiency by continuously analysing and improving all the above-mentioned work processes and their results. This is usually done in order to achieve both the value for the resources spent in producing the statistics and customer satisfaction. In addition to that, quality statistics are essential for making both evidence based plans and results oriented decisions.

1.2 Quality concepts and definitions in statistics

The quality of statistical data is assessed by means of a whole set of quality criteria such as relevance, accuracy, timeliness / punctuality, accessibility, interpretability and coherence. These have been used by many statistical agencies and organizations in defining quality though the criteria may slightly differ within the agencies/institutions.

1.2.1 Relevance

The relevance of statistical information reflects the degree to which it meets the actual needs of clients. It is concerned with whether the available information sheds light on the issues that are important to users. Assessing relevance is subjective and depends upon the varying needs of users. The statistical producers' challenge is to weigh and balance the conflicting needs of the current and potential users to produce a program that goes as far as possible in satisfying the most important needs within the given resource constraints.

1.2.2 Accuracy

The accuracy of statistical information is the degree to which the information correctly describes the phenomena it was designed to measure. It is usually characterized in terms of error in statistical estimates and is traditionally decomposed into bias (systematic error) and variance (random error)

components. It may also be described in terms of the major sources of error that potentially cause inaccuracy (e.g. coverage, sampling, non response and response errors.)

1.2.3 Timeliness and punctuality

The timeliness and punctuality of statistical information refers to the delay between the reference point to which the information pertains, and the date on which the information becomes available. The timeliness of information will influence its relevance. Most users of official statistics are interested in up to date information. Therefore, statistics should be released as closely as possible to dates specified in advance. Early release of the results is getting ever more important and is now a major point of emphasis for many statistics.

1.2.4 Accessibility

The accessibility of statistical information refers to the ease with which it can be obtained from the statistical producers. This includes the ease with which the existence of information can be ascertained, as well as the suitability of the form or medium through which the information can be accessed. The cost of the information may also be an aspect of accessibility to some users.

1.2.5 Interpretability

The interpretability of statistical information reflects the availability of the supplementary information and metadata necessary to interpret and utilize it appropriately. This information normally includes the underlying concepts, variables and classifications, the methodology of data collection and processing, and the indication or measures of the accuracy of the statistical information.

1.2.6 Coherence

The coherence of statistical information reflects the degree to which it can be successfully brought together with other statistical information within a broad analytic framework and over time. The use of standard concepts, classifications and target populations promotes coherence, as does the use of common methodology across statistical productions. Coherence does not necessarily imply full numerical consistency.

These quality criteria are overlapping and interrelated. There is no general model that brings them together to optimize a level of quality. Achieving an acceptable level of quality is the result of addressing, managing and balancing these elements of quality over time with careful attention to cost, respondent burden, professionalism and design constraints that may affect information quality or user expectations. This balance is a critical aspect of the design of the statistical productions.

PART TWO
QUALITY FRAMEWORK

2.0 Introduction

The quality framework is for assuring and assessing quality. It highlights three aspects of quality: total survey error, fitness for intended use and survey process quality, followed by guidelines for managing and assessing quality throughout the statistical production lifecycle.

2.1 Total survey error

The total survey error (TSE) paradigm is widely accepted as a conceptual framework for evaluating survey data quality. It defines quality as the estimation and reduction of the mean square error (MSE) of statistics of interest, which is the sum of random errors (variance) and squared systematic errors (bias). TSE takes into consideration both measurement (construct validity, measurement error, and processing error) i.e., how well survey questions measure the constructs of interest and representation (coverage error, sampling error, non response error and adjustment error) i.e., whether one can generalize to the target population using sample survey data. In the TSE perspective, there may be cost-error trade-offs, that is, there may be a tension between reducing these errors and the cost of reducing them. In this framework, TSE may be viewed as being covered by the accuracy dimension.

2.2 Fitness for intended use

This is a more modern paradigm, it is multidimensional and focuses on criteria for assessing quality in terms of the degree to which survey data meet user requirements. By focusing on fitness for the intended use, study design strives to meet user requirements in terms of survey data accuracy and other dimensions of quality (such as comparability and timeliness). In this perspective, ensuring quality on one dimension (comparability) may conflict with ensuring quality on another dimension (timeliness); and there may be conflict between meeting user requirements and the associated cost of doing so on one or more dimensions.

Dimensions of quality that are often used to assess the quality of national official statistics in terms of both survey error and fitness for the intended use are illustrated below showing the indicators of quality and the guidelines related to these dimensions.

2.2.1 Relevance

The produced statistical data should be valuable inputs that can fulfill the needs of the clients or users. For example, a dataset for trends in age-specific fertility rates derived from Tanzania Demographic and Health Surveys (TDHS) is relevant to the Ministry of Education for the projections of number of pupils expected to start primary education at a certain period of time.

2.2.1.1 Indicators for relevance

2.2.1.1.1 Description of clients and users

This indicator indentifies data producers and users. How relevant the information/statistics are to the clients, and whether the available information/statistics derived from various sources related to statistical production are important to users and whether they meet client's needs.

2.2.1.1.2 Description of users' needs (by main groups)

This indicator describes the needs of the users by categorizing their groups, with regards to the available information/statistics derived from various sources related to statistical production.

2.2.1.1.3 Assessment of user satisfaction

The indicator evaluates the level of customer satisfaction though Customer Satisfaction Index (CSI) related to the importance of the derived data.

2.2.1.2 Guidelines for relevance

2.2.1.2.1 Goals and objectives of statistical production should be clearly stated.

2.2.1.2.2 While designing the questionnaire, ensure that all survey questions are relevant to the statistical production objectives.

2.2.1.2.3 Construct a data file with a data dictionary of all variables in the selected elements data file, with all variable names and accompanying descriptions which are relevant to the statistical production objectives.

2.2.2 Accuracy

To ensure that the derived data describe the phenomena they were designed to measure. This can be assessed in terms of Mean Square Error (MSE).

2.2.2.1 Indicators for accuracy

2.2.2.1.1 Sampling error

(i) Type of sample design (stratified, clustered, etc)

(ii) Sampling unit at each stage of sampling - sampling unit to be defined at the beginning of the report

(iii) Stratification and sub-stratification criteria

(iv) Selection schemes

(v) Sample distribution over time

(vi) The effective sample size

(vii) Coefficient of variation of estimates and a description of the method used to compute them (including software)

(viii) An assessment of resulting bias due to the estimation method

2.2.2.1.2 Measurement errors

(ix) A description of the methods used to assess measurement errors (any field tests, reinterviews, split sample experiments, or cognitive laboratory results, etc)

(x) A description of the methods used to reduce measurement errors

(xi) Average time used to interview one person

(xii) An assessment of the effect of measurement errors on accuracy

2.2.2.1.3 Processing errors (caused by instruments or human error)

(xiii) A description of the methods used to reduce processing errors

(xiv) A description of the editing systems

(xv) The rate of failed edits for specific variables

(xvi) The error rate of coding for specific variables and a description of the methodology followed for their estimation

(xvii) A description of confidentiality rules and the amount of data affected by confidentiality treatment

2.2.2.1.4 Coverage errors

(xviii) A description of the sampling frame (e.g. intended household is collective instead of individual)

(xix) Rates of over- coverage, under-coverage and mis-classification broken down according to the sampling stratification

(xx) A description of the main mis-classification and under- and over- coverage problems encountered in collecting the data

(xxi) A description of the methods used to process the coverage deficiencies

2.2.2.1.5 Non response errors

(xxii) Unit non response rate

(xxiii) Identification and description of the main reasons for non response (e.g. non-contact, refusal, unable to respond, non-eligible, other reasons)

(xxiv) A description of the methods used to minimize non response

(xxv) Item non response rates for variables

(xxvi) A description of the methods used for imputation and/or weighting for non-response

(xxvii) Variance change due to imputation

(xxviii) An assessment of resulting bias due to non response

2.2.2.2 Guidelines

2.2.2.2.1 Pre-test all the versions of the survey instruments to ensure that they adequately convey the intended research questions and measure the intended attitudes, values, reported facts and /or behaviors.

2.2.2.2.2 In order to reliably project from the sample to the larger population with known levels of certainty/precision, use probability sampling.

2.2.2.2.3 Provide a report on each variable in the dataset of the selected elements to check correct overall sample size and within the stratum sample size, distribution of the sample elements by other specific groups such as census enumeration areas, extreme values, nonsensical values, and missing data.

2.2.2.2.4 If possible, assess accuracy by looking at the differences between the study estimates and any available true standard values.

2.2.3 Timeliness and punctuality

The quality of timeliness and punctuality are supposed to be observed at all stages of data production and dissemination. The experience has shown that, most of data production in NSS follows the accepted work plans which explain time to be taken by each activity. For example, time for designing instruments, dispatching and receiving dates of instruments, time for data processing, analysis and reporting; and date and time for dissemination. It is through this scenario, data producer can decide to measure the timeliness and punctuality based on the type of data production by selecting indicators elaborated below:

2.2.3.1 Indicators of timeliness and punctuality

2.2.3.1.1 The legal deadline imposed on respondents

This is an indicator which measures time set for a respondent to answer questions or reply to data producer based on the type of assignment.

2.2.3.1.2 The date instruments i.e. questionnaires were dispatched

This is an indicator used by data producers to monitor movement of instruments from the centre to the outreach offices or sub- locations or field.

2.2.3.1.3 Starting and finishing dates of fieldwork

This is a life span indicator which measures duration set for starting and finishing of data collection exercise either from the field or office. For example, if time set for data collection is one month, then, data quality assurance team should observe whether field-work is completed within or beyond a month.

2.2.3.1.4 Starting and finishing dates of data processing

This is also a life span indicator which measures duration set for starting and finishing of data processing exercise including data entry, editing and processing. For example, if time set for data processing is six months, then, data quality assurance team should observe if time period was correctly observed.

2.2.3.1.5 Dates for preliminary and final results computed and disseminated

This is an indicator which sets dates for the release of preliminary and final computed results to the public. This indicator depends on the completion of prior activities including field-work and data processing exercises. For example, if data is disseminated later than required by the regulation or contract, the average delay in days or months in

the transmission of results with reference to the legal deadline violate the quality of timeliness and punctuality.

2.2.3.2 Guidelines

It is important to note that, timeliness and punctuality is a qualitative indicator which depends on the availability of other factors including resources in terms of human, financial and infrastructure to be used in data production process. It is advised that data producers should not be over ambitious in setting time for each activity at the planning stage in order to reduce biasness. For example, data producer should be careful in setting:

2.2.3.2.1 Time for each activity should also be set by observing external factors which may hinder its performance properly; and

2.2.3.2.2 Data producer should create a study timeline, production milestones, and deliverables with due dates.

2.2.4 Accessibility

This is the ability to retrieve data for the benefit of as many users as possible. Very often, collection of data consumes a lot of financial and human resources; therefore, should not be locked in cabins. Data must be made available in hard copies and soft copies through various media such as libraries, CD Rom, websites and even e-mailing to regular users.

2.2.4.1 Indicators of accessibility

2.2.4.1.1 Description of how to locate and access publications based on analysis of the data.

The storing of data in a systematic and classified order indicating the subject and time series the data covers. The system can be used for easy access of data by users in a library, website etc.

2.2.4.1.2 Information on what results are sent to the reporting units included in the survey.

This is the set of results sent to units that supply the data for a given survey. It is a feedback that creates trust between the data collector and supplier which is important as it creates the two way information traffic.

2.2.4.1.3 Information on the dissemination scheme of the results.

This is the policy statement indicating the set of data and time it is to be made available and accessible to users. It is important for data producers to make data available as per the dissemination scheme in order to create trust among the users. If the dissemination time -table is not adhered to, then, users lose trust on the data and sometimes when data are made available and accessible they may be obsolete and therefore, useless irrespective of how much resources were spent in their collection. An example of the dissemination time-table is the Tanzania Master Plan Release Calendar.

2.2.4.1.4 A list of Variables required but not available for Reporting.

This is the list of attributes or quantitative values required by data users which is not available for reporting. Attributes can be Identification Number, Establishment ID while quantitative value is expressed in numeric value.

2.2.4.1.5 Reasons why variables are not available.

Reasons of why variables are not available for reporting include; the anonymity for individual data sets based on professional ethical principles for protecting privacy and maintaining confidentiality. A good example is the NBS confidentiality on individual entity data sets. Other reasons could be that the information is not collected due to budgetary constraints.

2.2.4.2 Guidelines

2.2.4.2.1 Save all data files and computer syntax in different statistical software packages during sample design and data processing in safe and well labeled folders for future reference and use.

2.2.4.2.2 Establish procedures early in the survey lifecycle to ensure that all important files are preserved.

2.2.4.2.3 Test the archived files periodically to verify user accessibility.

2. 2.4.2.4 Create electronic versions of all project materials on a regular basis at each stage of statistical production.

2.2.4.2.5 Produce and implement procedures to distribute restricted use files, if applicable. (Removing identifiers, off-setting GPS coordinates, etc)

2.2.5 Interpretability

The process of data collection and subsequent processing should have an impact to the measure of accuracy that is being represented. The information collected often includes underlying concepts, variables and classification on how it is to be used. The interpretability of data is directly related to its availability to be aggregated with other pieces of information necessary to interpret it appropriately such as metadata and paradata.

Metadata is defined as data providing information about one or more aspects of the data while paradata are data about the process by which the survey data were collected. For example, paradata topics about a survey include the time of day interviews that were conducted, how long the interviews took, how many times there were contacts with each interviewee or attempts to contact the interviewee, the reluctance of the interviewee, and the mode of communication (such as phone, Web, email, or in person).

2.2.5.1 Indicator of Interpretability

2.2.5.1.1 A copy of methodological documents (sampling design, classifications, instructions manual, codebook) relating to the statistics provided

2.2.5.1.2 A metadata embedded with the data file may include the information on means of creation of the data, purpose of data, time and date of creation and location on a computer network.

2.2.5.1.3 A paradata document shows how each observation in the survey affect the costs and management of a survey, the findings of a survey, evaluations of interviewers, and inferences one might make about non-respondents. Sometimes paradata is called "administrative data about the survey".

2.2.5.1.4 Visualization tools are among the most effective ways to display development indicators through graphs and charts. It is a visual display of data which makes comparisons easier and promotes a better understanding of trends. Such charts include bubble diagrams etc.

2.2.5.2 Guidelines

2.2.5.2.1 At the data processing stage of the study, create a codebook that provides question- level metadata matched to variables in the dataset. Metadata include variable names, labels, and data types as well as basic study documentation, question text, universes (the characteristics of respondents who were asked the question) of the number of respondents who answered the question, and response frequencies.

2.2.5.2.2 Make available the system that stores all the necessary information collected during data collection.

2.2.6 Coherence

The quality of coherence ensures that, data can be combined with other statistical information for various secondary purposes. Two or more different statistical data-sets can be used together for measuring and or determining some other statistical information, e.g. GDP with the economic growth; GDP with population growth rate, inflation rate which determines people's purchasing power and their economic welfare, etc.

Therefore, this ensures that the combined data together with other statistical information can be used in various secondary purposes.

2.2.6.1 Indicators of coherence

2.2.6.1.1 A description of every pair of statistics (statistical unit, indicator, domain, and breakdown) for the survey(s) that should be coherent.

2.2.6.1.2 A description of any of the differences that are not fully explained by the accuracy component.

2.2.6.1.3 A description of the reported lack of coherence, for specific statistics.

2.2.6.2 Guidelines

2.2.6.2.1 Create a clear, concise description of all survey implementation procedures to assist secondary users.

2.2.6.2.2 Provide data files in all the major statistical software packages and test all thoroughly before they are made available for dissemination.

2.2.6.2.3 Designate resources to provide user support and training for secondary researchers.

2.2.7 Comparability

The observed data from different geographical locations of the same dimension can be compared with other data-sets, if at all they explain the same phenomenon, e.g. Inflation Rate of Tanzania can be compared with those of other East African countries or even beyond the African boundaries as one of the SNA objectives states. This will ensure as much as possible that, the same statistical data from different sources or different geographical locations are comparable.

2.2.7.1 Indicators of comparability

2.2.7.1.1 Time (temporal)

(i) The differences, if any, in concepts and methods of measurement between last and previous reference periods.

(ii) A description of the differences, including an assessment of their effect on the estimates.

2.2.7.1.2 Geographical (spatial)

(i) All differences between local practices and national standards (if such standards exist)

(ii) An assessment of the effect of each reported difference on the estimates

2.2.7.1.3 Domains

(i) A description of the differences in concepts and methods across cross-cultural surveys (e.g., in classifications, statistical methodology, statistical population, methods of data manipulation, etc.)

(ii) An assessment of the magnitude of the effect of each difference

2.2.7.2 Guidelines

2.2.7.2.1 Define comparable target populations and verify that the sampling frames provide adequate coverage to enable the desired level of generalization.

2.2.7.2.2 Minimize the amount of measurement error attributable to survey instrument design, including error resulting from context effects.

2.2.7.2.3 Minimize or account for the impact of language differences resulting from potential translations.

2.2.7.2.4 Minimize the effect interviewer attributes have on the data through appropriate recruitment, selection, and case assignment; minimize the effect that interviewer behavior has on the data through formal training.

2.2.7.2.5 Identify potential sources of unexpected error by implementing pretests of translated instruments.

2.2.7.2.6 Reduce the error associated with non-response as much as possible.

2.2.7.2.7 Minimize the effect that coder error has on the data through appropriate coder training.

2.2.7.2.8 Provide variables definitions to minimize comparability of incomparable variables.

2.3 Survey process quality management

This approach focuses on quality at three levels; the organization, the process and the product. Quality products cannot be produced without quality processes, and having quality processes requires an organization that manages for quality. A focus on the survey process quality is to ensure the quality of survey production processes and consequently the survey data throughout the statistical production lifecycle, as well as a clear and comprehensive documentation of study methodology and to provide indicators of the process and data quality.

The guidelines below illustrate Survey Process Quality Management that allows users to assess the quality of processes throughout the statistical production lifecycle.

2.3.1 Develop a sustainable quality management plan.

2.3.1.1 Rationale

Developing planned, systematic quality assurance and quality control activities helps to ensure that the study and survey data meet the client or user requirements. It also facilitates development of a quality profile or quality report, which documents survey methodology, key indicators of quality, lessons learned, and recommendations for improvement.

2.3.1.2 Procedural steps

2.3.1.2.1 Review the existing quality profiles and lessons learned from other studies. Use the standardized quality profiles and protocols to establish sustainable quality management.

2.3.1.2.2 Review the study requirements for quality assurance and quality control. These may be developed at the study design stage by the survey organization.

2.3.1.2.3 Review the study goals and objectives, required products and deliverables, study timeline and budget.

2.3.1.2.4 Through analysis of the process in the statistical production lifecycle (process analysis), identify characteristics of survey products (e.g. coded data) that could vary during the process (e.g. verification failures). For example,

(i) Use tools to analyze a process, to determine what steps in the process need to be monitored to ensure quality, and to identify quality indicators to monitor.

(ii) Identify key indicators of the quality of the process products in terms of TSE and other dimensions of quality, as well as factors such as cost, burden, and the risk of not meeting quality requirements.

(iii) Define measurement and reporting requirements for use during quality assurance and quality control, and determine who would be responsible for ensuring that quality assurance and quality control activities are carried out.

(iv) Assess whether the requirements can be met through the current procedures and system and with currently collected data and if not, develop a process improvement plan.

(v) Create cost/error trade-off decision rules about how to alter the features of the study design if the goals are not met.

2.3.1.2.5 Use quality planning tools to help determine what performance analyses and assessments should be used. For example,

(i) A cost-benefit analysis of potential quality management procedures and activities; that is, evaluating their benefits in relation to the cost of performing them relative to the overall study costs.

(ii) Benchmarking, that is, comparing planned activities against those of similar studies, and the outcomes of those activities, to form a basis for performance measurement.

(iii) Statistical analysis of factors that may influence indicators of the process or product quality.

2.3.1.2.6 Develop a quality assurance plan, which could include:

(i) The process improvement plan.

(ii) Performance and product quality baselines.

(iii) Process checklists.

(iv) A training plan.

(v) Recommended performance analyses and assessments, for example quality assurance procedures for verifying interviews and evaluating interviewer performance (PES).

2.3.1.2.7 Develop a plan for continuous monitoring of processes to ensure that they are stable and that products are meeting the requirements (Quality Control). Such a plan could include:

(i) The process improvement plan.

(ii) Performance and product quality baseline.

(iii) Quality indicators identified in the process of analysis and planning for the design.

(iv) Performance analyses and assessments to monitor the process.

(v) Tools to monitor the process and product quality, e.g. statistical process control charts.

(vi) Reports to prepare performance measurement, such as interviewer training certification.

2.3.1.2.8 Develop procedures to ensure that throughout the statistical production lifecycle, all documentation, reports and files related to quality planning and assurance, quality monitoring and control, and process improvement are retained.

2.3.1.2.9 Develop procedures for updating the quality management plan as needed during the statistical production lifecycle.

2.3.2 Perform quality assurance activities.

2.3.2.1 Rationale

Quality assurance is the planned procedures and activities an organization uses to ensure that the study meets the process and product quality requirements. It specifies ways in which quality can be measured.

2.3.2.2 Procedural steps

2.3.2.2.1 Perform quality assurance activities as outlined in the quality management plan.

2.3.2.2.2 Carry out performance and product quality assessments. For example:

(i) Certification of interviewers after training (e.g. rate of certification and rate of certification after follow-up training) that is, based on evaluation of interviews, determination that the interviewer is ready to work on the study.

(ii) Verification of coded questionnaires (rate of verification failures).

2.3.2.2.3 Generate indicators of quality for each assessment, based on baselines established in quality planning, and create reports on performance and quality assessments, which can be used for both quality monitoring and control.

2.3.2.2.4 Provide documentation for:

(i) Performance and quality assessments

(ii) Recommended corrective actions and corrective actions taken

(iii) Changes to quality assurance plan.

2.3.3 Perform quality control activities.

2.3.3.1 Rationale

Quality control is the planned system of process monitoring, verification and analysis of indicators of quality, and updates to quality assurance procedures, to ensure that quality assurance works.

2.3.3.2 Procedural steps

2.3.3.2.1 Perform quality monitoring and control activities as outlined in the quality management plan, such as:

(i) Monitor the process of quality indicators

(ii) Analyze and report on the results of quality assurance activities such as interviewer training certification, data entry verification and checking that a process met the specifications.

2.3.3.2.2 Determine whether there is a need to:

(i) Recommend corrective actions

(ii) Modify the process improvement plan

(iii) Modify the quality management plan

2.3.3.2.3 Provide documentation for:

(i) Performance and quality assessments

(ii) Recommended corrective actions and corrective actions taken

(iii) Changes to the quality management and quality assurance plans

2.3.4 Create a quality profile

2.3.4.1 Rationale

A quality profile (quality report) combines information from other sources, documenting survey methodology used throughout the statistical production lifecycle, providing indicators of the process and data quality, lessons learned and recommendations for improvement. It provides to the user all the information available to help assess data quality in terms of fitness for the intended use and total survey error.

2.3.4.2 Procedural steps

2.3.4.2.1 Document procedures and methodology used for key stages or processes in the statistical production. For example, for sample design, this would include:

(i) Time dimension of the design

(ii) Target and survey population definitions, including inclusion/exclusion criteria

(iii) Sampling frame descriptions

(iv) Maps and protocol used in field listing

(v) Description of all stages of selection, including sample sizes, stratification, clustering and number of replicates fielded at each stage

(vi) Documentation of procedures to determine probabilities of selection and weights for each stage of selection

(vii) Tables of the precision of the estimates of key survey statistics

For Each documented process should include:

(i) Quality assurance procedures

(ii) Quality control procedures

(iii) Corrective actions taken

2.3.4.2.2 Document lessons learned and make recommendations for improvement in studies of the same design, and if possible, make recommendations for methodological research that could inform design of similar studies in the future.

PART THREE
QUALITY INPUTS AND GUIDELINES IN DATA PRODUCTION STEPS

3.0 Introduction

This section brings together guidelines and checklists on major issues that need to be considered in the pursuit of quality objectives in the execution of statistical activities. Its focus is on how to assure quality through effective and appropriate design and implementation of a statistical programme from inception through data evaluation, documentation and dissemination. It is organized in sub-sections that correspond to the main activities of a typical survey. All the sub-sections follow the same structure, describing the inputs, guidelines and quality indicators related to each activity.

Guidelines

These are known good practices that have evolved in the design and implementation of statistical surveys. However, not all of these guidelines can be applied to every statistical production. The guidelines provide checklists to aid survey designs.

Quality indicators

These consist of information which is a by-product of the statistical process. They do not measure quality directly but can provide enough information to offer valuable insight into quality. It will be of interest to directors, statistical production managers and data users, who will use the indicators to assess and compare the quality of various statistical products. It will also provide a basis to directors and managers of different program areas for monitoring performance in terms of quality of the processes and products in the program areas.

3.1 Coverage and frames

Goal: The survey population should be reasonably consistent with the target population in order for the survey results to be relevant. Coverage is the completeness of the information for the target population that would be derived if all the frame units were to be surveyed. The frame should conform to the survey population and should contain minimum under-coverage and over-coverage. Frame data should be up-to-date and accurate because of their use in stratification, sample selection, collection follow-up, data processing, imputation, estimation, quality assessment and analysis.

3.1.1 Quality inputs

3.1.1.1 Define the target and survey population

3.1.1.2 Description of the frame and its coverage errors

3.1.2 Guidelines

3.1.2.1 Frames should be tested at the planning stage of a survey for their suitability and quality, assess the coverage of the frame and of the target collection units.

3.1.2.2 Ensure that the frame is as up to date as possible relative to the reference period for the statistical production.

3.1.2.3 Where possible, use the same frame for surveys with the same target population to avoid inconsistencies, to facilitate combining estimates from the surveys and to reduce costs of frame maintenance and evaluation.

3.1.2.4 Implement survey procedures to detect and correct coverage errors from the frame, provide feedback to up-date and maintain the frame.

3.1.2.5 Monitor the frame between the time of sample selection and the survey reference period.

3.1.2.6 Implement training and procedures for data collection and data processing staff aimed at minimizing coverage error.

3.1.2.7 Minimize frame errors through effective training of staff, putting emphasis on the importance of coverage, and the implementation of quality assurance procedures of frame and related activities.

3.1.2.8 Implement procedures to detect and minimize errors of omission and mis-classification that can result into under-coverage, and to detect and correct errors of mistaken inclusion and duplication resulting into over-coverage.

3.1.2.9 Monitor the frame quality by periodically assessing its coverage and the quality of the information on the characteristics of the units.

3.1.3 Quality indicators

Main quality dimensions and elements: Accuracy – Coverage error and Relevance.

3.2 Sample design

Goal: In each survey, to select an optimal, cost-efficient probability sample that is representative of the target population and allows users to make inferences to the target population, and to standardize sample designs without hampering optimal designs.

3.2.1 Quality inputs

3.2.1.1 Target and survey population description.

3.2.1.2 Sampling frame definitions, including definitions of strata and sampling units, and any up-dating of the frame that was needed.

3.2.1.3 Desired level of precision overall and for specific sub-groups.

3.2.1.4 Sample size based on specified levels of precision.

3.2.1.5 Selection procedure(s) and estimates of probabilities of selection at each stage.

3.2.1.6 Field listing standard procedures and minimum requirements of field listers.

3.2.1.7 Unique, sample identification codes for each selected sampling unit.

3.2.2 Guidelines

3.2.2.1 When determining the sample size, take into account the required levels of precision needed for the survey estimates, the type of design and estimators to be used, the availability of auxiliary information, budgetary constraints as well as both sampling and non-sampling factors.

3.2.2.2 Alter the survey design during data collection to minimize costs and errors.

3.2.2.3 For longitudinal panel surveys, determine its duration of time in the sample by balancing the need for duration data with sample attrition and conditioning effects.

3.2.2.4 For periodic surveys, develop procedures to monitor the quality of the sample design over time. Set up an up-to-date strategy for selective redesign of the strata that have suffered serious deterioration.

3.2.2.5 For periodic surveys, make the design as flexible as possible to deal with future changes such as increases or decreases in sample size, re-stratification, re-sampling and up-dating of selection probabilities.

3.2.2.6 Establish an expected response rate using a pre-test or data from previous occasions of the same or similar surveys, which can in turn be used in sample size determination.

3.2.3 Quality indicators

Main quality dimensions and elements: Accuracy – coverage error, sampling error as described previously.

3.3 Questionnaire design

Goal: To maximize the comparability of survey questions across different surveys and cultures and reduce measurement error related to questionnaire design.

3.3.1 Quality inputs

3.3.1.1 Survey objectives and research questions.

3.3.1.2 Review of literature and any relevant studies to identify useful material.

3.3.1.3 Documentation templates.

3.3.1.4 Documentation of the origin of any existing questions or materials to be considered for re- use.

3.3.2 Guidelines

3.3.2.1 Design self-completed questionnaires to be attractive and easy to complete, give a positive first impression in the cover letter and front cover and make the questionnaire appear professional and business-like.

3.3.2.2 Choose questionnaire design and wording that encourage respondents to complete the questionnaire as accurately as possible. The questionnaire must focus on the topic of the survey, be as brief as possible and flow smoothly (including skip patterns) from one question to the next.

3.3.2.3 Consulting major data users during the questionnaire design process for clear understanding of how the data are to be used. Undertake a review of the existing subject matter literature and surveys both nationally and internationally for a well designed questionnaire that meets the users` needs.

3.3.2.4 In the introduction to the questionnaire, provide the title of the survey, explain the purpose of the survey, identify the sponsor, indicate the authority under which the survey is being executed, the confidentiality protection measures, and request the respondent's cooperation.

3.3.2.5 Harmonize concepts and wording with those already in use, when appropriate re-use questions from other surveys.

3.3.2.6 With respect to questionnaire layout, provide headings for each section of the questionnaire, instructions and answer spaces that facilitate accurate answering of the questions, use colour, shading, illustrations and symbols to attract attention and guide the respondents or interviewers to the parts of the questionnaire that are to be read and to indicate where answers are to be placed. At the end of the questionnaire, provide space for additional comments by respondents and include an expression of appreciation to the respondents.

3.3.2.7 Consider two phases of questionnaire testing (mock interviews and pre-testing). This involves testing the questionnaire at an early stage of its development, making revisions to the questionnaire based on the findings, and then testing the revised questionnaire.

3.3.2.8 Hold de-briefing sessions with interviewers after testing the questionnaire. Let the interviewers discuss their experiences in interviewing respondents and how the questionnaire performed. They can identify potential sources of response and non-response errors as well as areas where the questionnaire can be improved.

3.3.2.9 Conduct pilot-testing after a thorough questionnaire test to observe how all the survey operations, including the administration of the questionnaire and survey logistics work together in practice. The pilot test provides an opportunity to fine-tune the questionnaire and logistics before their use in the main survey.

3.3.3 Quality indicators

Main quality dimensions and elements: Accuracy – measurement error, Relevance and Coherence.

3.4 Translation of survey instruments

Goal: To create and follow optimal procedures to standardize, assess, and document the processes and outcomes of survey questionnaire translation.

3.4.1 Quality inputs

3.4.1.1 Source questionnaire and any material to be translated.

3.4.1.2 Templates of translation development, as relevant.

3.4.1.3 Delivery schedule including any further refinements proposed that relate to translation (procedure such as language harmonization, adaptation, pre-testing and any required adjudication steps).

3.4.1.4 Back translation.

3.4.2 Guidelines

3.4.2.1 Create translation team, briefing, training and monitoring.

3.4.2.2 Produce draft translations, checking translator output at an early stage of production.

3.4.2.3 Maintain documentation at each stage.

3.4.2.4 Review and adjudicate the translations.

3.4.2.5 Pre-test the translations.

3.4.2.6 Repeat any translation refinement step as needed.

3.4.3 Quality indicators

Main quality dimensions and elements: Accuracy – measurement error and Interpretability.

3.5 Interview recruitment and training

Goal: To improve the overall quality of the survey data by minimizing interviewer effects while controlling costs by optimizing interviewer efficiency.

3.5.1 Quality inputs

3.5.1.1 Recruitment and training timeline

3.5.1.2 Minimum standards for survey staff employment

3.5.1.3 Study specific requirements (e.g. gender, language, etc)

3.5.1.4 Assessment tests for employment

3.5.1.5 Minimum interviewer requirements checklist

3.5.1.6 Criteria for dismissal of follow-up training

3.5.2 Guidelines

3.5.2.1 Train the trainers before they train the interviewers

3.5.2.2 Complete the checklist during candidate screening

3.5.2.3 Take attendance during the training

3.5.2.4 Certify the candidates

3.5.2.5 Dismiss or retrain candidates who fail certification

3.5.2.6 Maintain written records of the candidates certification tests results

3.5.3 Quality indicators

Main quality element: Relevance and Accuracy – measurement error.

3.6 Pre-testing

Goal: To ensure that the versions of the survey instruments adequately convey the intended research questions, measure the intended attitudes, values, reported facts and behaviours, and that the collections of data are conducted according to the specified study protocols in every survey.

3.6.1 Quality inputs

3.6.1.1 Pre-testing plan, including pretest goals, evaluation techniques, timelines, and budget

3.6.1.2 Standard procedures for cognitive interviews

3.6.2 Guidelines

3.6.2.1 Identify what the pre-test should achieve and choose a pre-test design that best fits the study goals.

3.6.2.2 Combine pre-testing techniques to create a comprehensive design plan that takes advantage of the strengths and minimizes the weaknesses of each method.

3.6.2.3 Train or hire staff members who are able to adequately implement the chosen pre-testing technique(s).

3.6.2.4 Conduct the pre-test in the same mode of data collection (interviewer administered or self-administered) as the main survey.

3.6.2.5 Conduct the pre-test with the same target population as the target population for the survey.

3.6.2.6 Pre-test the survey instrument or part of it in each country and in each language.

3.6.2.7 Document fully, the pretesting protocol and findings.

3.6.3 Quality indicators

Main quality dimensions and elements: Accuracy – measurement error.

3.7 Data collection

Goal: To achieve an optimal statistical survey data collection design by maximizing the amount of information obtained per monetary unit spent within the allotted time, while meeting the specified level of precision and producing data of good quality.

3.7.1 Quality inputs

3.7.1.1 Target outcome rates (e.g. response, refusal, non contact), and completion rates

3.7.1.2 Target hours per interview

3.7.1.3 Re-contact or re-interview the respondents

3.7.1.4 Percentage of interviewer cases to be verified

3.7.1.5 Verification of questions

3.7.1.6 Interviewer performance checklist

3.7.2 Guidelines

3.7.2.1 Interviewers are critical to the success of most of the data collection. Interviewer manuals and training must be carefully prepared and planned since they provide the best way to guarantee data quality, the comprehension of survey efforts and subject matter, as well as to ensure proper answers to the questions from the respondents.

3.7.2.2 Careful planning of the data collection process should include the establishment of roles and responsibilities regarding all aspects linked to data collection, in order to reduce respondent's burden and collection cost, and maximize timeliness and data accuracy

3.7.2.3 Establish appropriate sample control procedures for all data collection operations. Such procedures track the status of sampled units from the beginning through the completion of data collection so that data collection managers and interviewers can assess progress at any point in time.

3.7.2.4 Establish and maintain good respondent's relationships in order to obtain a good response rate. Such measures can include advertising the up-coming survey, an introductory letter to inform the respondents that they will be part of the survey, an informative brochure with key statistics to maintain their interest in participating in the survey and a letter thanking them for their participation. These will help to sensitize the selected units in the sample to participate in the survey.

3.7.2.5 Ensure that the respondent within the responding household is contacted at the appropriate time so that the information is readily available. Allow the respondents to provide data in a method and format that is convenient to them. This will help to increase response rates and improve the quality of the information obtained from the respondents.

3.7.2.6 Tracking should be conducted to locate and contact the respondents when the available contact information on the survey unit is likely to be out-dated. Tracking increases response rate and also helps in determining if the sampled unit is still in the scope.

3.7.3 Quality indicators

Main quality dimensions and elements: Accuracy – Non response error, Timelines and Punctuality and Interpretability.

3.8 Data processing and statistical adjustment

Goal: To code and capture data from their raw state to an edited data file that can be used within the survey organization for quality assessment of the survey implementation and harmonized with other surveys' data files in preparation for statistical adjustment, dissemination, and eventually substantive research.

3.8.1 Quality inputs

3.8.1.1 Percentage of manually entered questionnaires to be verified

3.8.1.2 Items to be coded

3.8.1.3 Coding protocol (manually or automatic)

3.8.1.4 Percentage of manually coded cases to be check coded

3.8.1.5 Data editing protocol

3.8.1.6 Appropriate statistical software

3.8.1.7 Appropriate statistical adjustments (e.g. imputation, weights)

3.8.1.8 Appropriate standard error estimation

3.8.2 Guidelines

3.8.2.1 Use coding to classify survey responses into categories with associated numeric values. This can be done as follows:

3.8.2.1.1 Review survey answers for response patterns and make any necessary modifications to the pre-coded response options in order to accurately represent range of the collected data, as well as use this data review to create codes for each variable that had not been pre-coded. Create code structures systematically as follows;

a. Design the code framework with the following attributes:
   (i) One value for each code number
   (ii) A text label for each code number
   (iii) A code number for each possible response category (remember to include code numbers for item-missing data, e.g. "Don't know," "Refused," and "Not Applicable")
   (iv) Mutually exclusive response categories for each variable
   (v) The appropriate number of categories to meet the analytic purpose.

b. With hierarchical code structures, have the first character to represent the main coding category with subsequent characters representing subcategories.

c. Use consistent codes across survey items. For example:
   (i) A "Strongly Agree, Agree, Neither Agree nor Disagree, Disagree, Strongly Disagree" scale would always have the values ranging from 1 = Strongly Agree to 5 = Strongly Disagree.
   (ii) A "Yes-No" item would always have the values 1 = Yes and 2 = No.

(iii) Refused item-missing data would always have the values of 9 (or if two-digit code numbers, the values of 99).

d. Keep a link from the codes to the verbatim data to facilitate quality control.

3.8.2.1.2 Generate a data dictionary entry for each survey item. Each entry should contain the following information:

(i) Variable ID, name, and label.
(ii) Data format.
(iii) Response options and associated code numbers.
(iv) Universe statement.
(v) Interviewer and respondent instructions.

3.8.2.1.3 Building upon data dictionary, develop a code-book which describes how the survey responses are associated with all the data. The code-book includes additional metadata on the survey items, such as the question text and raw frequency of responses.

3.8.2.1.4 For automated coding, feed the responses into a computer with software that assigns appropriate code- numbers based on matching the responses to a data dictionary.

3.8.2.1.5 Properly train coders on the study's coding design, and periodically assess their abilities.

3.8.2.2 Capture the data into an electronic format. This can be done as follows;

3.8.2.2.1 Use similar conventions in programming the data entry application as used when programming the survey instrument application. For example, maintain the question order and the measurement units of the survey in the data entry system.

3.8.2.2.2 When entering values, allow for interviewer/keyer edit checks to reduce processing error.

3.8.2.2.3 With a paper and pencil questionnaire, minimize the required amount of interviewer judgment by having an expert, such as a supervisor; check the responses before data entry. The expert should mark the questionnaire with the value to be entered when the response is not clearly indicated.

3.8.2.2.4 Perform independent rekey verification.

(a) Have two keyers work separately and then compare their work.

(b) Settle the discrepancies with a computer or an adjudicator.

(c) Strive to verify 100% of the data entry.

(d) Look for the following keyer errors:

(i) Wrong column/field

(ii) Corrected/modified (misspelled) responses.

3.8.2.2.5 Consider automated alternatives to key entry, including:

(i) Optical Character Recognition (OCR) to read machine-generated characters.

(ii) Intelligent Character Recognition (ICR), commonly known as scanning, to interpret handwriting.

(iii) Mark Character Recognition (MCR) to detect markings.

3.8.2.3 Edit the data as a final check for errors as follows;

3.8.2.3.1 Create editing rules that the interviewers and editing staff can follow both during and after data collection. This can include checking for the following:

(i) Wild values (such as out of range responses, unspecified response categories, etc.)

(ii) Imbalance values (e.g. subcategories that do not sum to the aggregate)

(iii) Inconsistent values (e.g. males that report pregnancies, etc)

(iv) Implausible outliers (e.g. extremely high or low values)

(v) Entirely blank variables.

(vi) Confirming the proper flow of skip patterns.

(vii) Flagging omitted or duplicated records.

(viii) Ensuring a unique identification number for every sample element, as well as a unique identification number for each interviewer.

3.8.2.3.2 Create a flag that indicates a change has been made to the collected data, and keep an un-edited dataset in addition to the corrected dataset. The latter will help to decide whether the editing process adds value. If an unedited data are not kept, it is truly impossible to establish whether or not improvements have been made.

3.8.2.3.3 Assess a random sample of each interviewer's completed questionnaires by examining the captured data. Review the use of skip patterns and the frequency of item-missing data to see if the interviewer needs additional training on navigating the instrument or probing for complete answers.

3.8.2.4 Develop survey weights for each interviewed element on the sampling frame.

3.8.2.5 Consider using single or multiple imputations to compensate for item-missing data. Single imputation involves replacing each missing item with a single value based on the distribution of the non-missing data or using auxiliary data; and the goal of multiple imputations is to account for the decreased uncertainty imputed values have compared to observed values.

3.8.2.6 When calculating the sampling variance of a complex survey design, use a statistical software package with the appropriate procedures and commands to account for the complex features of the sample design.

3.8.2.7 Document the steps taken in data processing and statistical adjustment.

3.8.3 Quality indicators

Main quality dimensions and elements: Interpretability

3.9 Data dissemination

Goal: To ensure that data producers and users of all cultures involved in a project follow the accepted standards for the long-term preservation and dissemination of data to the social science research community and the wider public.

3.9.1Quality inputs

3.9.1.1 Procedures for testing accessibility of achieves with knowledgeable users

3.9.1.2 Procedures for electronic preservation of files

3.9.1.3 Procedures for testing files with major statistical packages

3.9.2 Guidelines

3.9.2.1 Make dissemination and data preservation plan early in the statistical project lifecycle that includes archiving, publishing and distribution. Verify and ensure that the released data after all the processing steps are consistent with the source data. In the case of the derived variables, it means that one should be able to reproduce the same results from the source data.

3.9.2.2 Preserve sustainable copies of all key data and documentation files produced during the data collection process, as well as those files made available for secondary analyses. Consider;

3.9.2.2.1 To define the long-term preservation standards and protocols used.

3.9.2.2.2 To maintain older versions of important data and documentation files so that users can follow the changes made from one version to the next.

3.9.2.2.3 Archiving collections in one archive which would keep master copies of files in several locations but minimize the possibility of conflicting versions of data and documentation files.

3.9.2.3 Conduct a disclosure analysis to protect respondent confidentiality. The key goal of disclosure risk analysis is to ensure that the data maintain the greatest potential usefulness while simultaneously, offering the strongest possible protection to the confidentiality of the individual respondents.

3.9.2.4 Think about the production of both public and restricted use of data files. Considering the following:

(a) Make data files fully available to the research community by establishing clear rules under which researchers can obtain the data.

(b) Establish clear policies for how users may access the restricted data files by creating a set of application materials and restricted-use data agreement that specify how users can obtain and use such data.

(c) In order to provide optimal utility for the users, produce a variety of products for varied constituencies;

(i) Produce set-up files and ready to use portable files in SPSS and STATA to address the needs of those who seek to do intensive statistical analyses with particular software packages.

(ii) Consider disseminating data on removable media, e.g. CD ROM or DVD if appropriate.

3.9.2.5 Consider disseminating research findings. This can be done by creating a dissemination plan and making research results accessible to the desired audiences such as study participants, community members, Agencies and Services Providers and Policy makers.

3.9.3 Quality indicators

Main quality dimensions and elements: Accessibility, Timeliness, Relevance and Coherence.

ANNEXES

Annex I

Tanzania Household Budget Survey
CONTROL FORM - Complete for every Issued Household

REGION ☐☐	**ENUMERATION AREA (EA)** ☐☐☐
DISTRICT ☐	**HOUSEHOLD NUMBER** ☐☐
	Urban 1 Rural 2 DSM 3 ☐
WARD ☐☐☐	**Household Number from the Listing Form** ☐☐☐
Name of Interviewer _____ **Interviewer Code** ☐☐☐	**Name of Supervisor** _____ **Supervisor Code** ☐☐☐
Original Household 1 Replacement Household 2 ☐	**Name and surname of Head of Household (HoH)** _____
	1 – HoH from listing 2 – New HH Head ☐
Telephone number with dialling codes ☐☐☐ / ☐☐☐ / ☐☐☐☐☐☐☐	**New name of HH Head (write in)** _____
	Total number of household members ☐☐
	Date interview completed ☐☐ / ☐☐ / ☐☐☐☐

Number of Visits to the Household

Call No.	Time of call		Outcome of call
	Date	Time	Comments. For REFUSALS GIVE A FULL DESCRIPTION OF REASON FOR REFUSAL AND PERSONS WHO REFUSED (GENDER, AGE, ETC.)
1			
2			
3			

Total number of visits ☐☐

Final Household Outcome

1 Household interviewed
2 Non-contact after 3 calls
3 Address not found
4 Address empty/derelict
5 Address temporarily empty
6 Household refused
7 Household refused to do Diary
8 Replacement Address not contacted

ENTER FINAL HOUSEHOLD OUTCOME ☐

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Vision

To be a preferable source of official statistics in Tanzania

Mission

To facilitate informed decision-making process, through provision of relevant, timely and reliable user-driven statistical information, coordinating statistical activities and promoting the adherence to statistical methodologies and standards