GUIDELINES FOR THE PRODUCTION OF INFORMAL CROSS BORDER TRADE (ICBT) STATISTICS









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Abbreviations and acronym

AU	African Union
BOP	Balance of Payments
CAPI	Computer Assisted Personal Interview
CIF	Cost Insurance and Freight
DSA	Daily Subsistence Allowance
EAC	East African Community
FCFA	Franc des Colonies Françaises d'Afrique
FOB	Free on Board
GIS	Geographical Informal System
HS	Harmonized System
ICBT	Informal Cross Border Trade
ICBTS	Informal Cross Border Trade Survey
IMF	International Monetary Fund
IMTS	International Merchandise Trade Statistics
MoU	Memorandum of Understanding
NSA	National Statistics Agency
REC	Regional Economic Communities
PAPI	Paper Based Personal Interview
PAS	Pan African Statistics Programme
SHaSA	Strategy for the Harmonisation of Statistics in Africa
STATAFRIC	African Union Statistics Bureau
UN	United Nations
UNSD	United Nations Statistics Division
USAID	United States Agency for International Development
USD	United States Dollar
WB	World Bank
WVRD	World Vision Relief and Development

Foreword

Informal cross-border trade (ICBT) represents a prominent phenomenon in Africa. Several studies suggest that for certain products and countries, the value of informal trade may meet or even exceed the value of formal trade. Despite its importance to the livelihoods of millions of Africans, the magnitude of informal trade is not well estimated on the continent.

The Strategy for the Harmonisation of Statistics in Africa (SHaSA 2) in its strategic objective 1.3 aims to harmonise the standards and methods of statistical production. This objective seeks to adapt international norms and methods to African realities. The harmonization of these norms and methods will foster increased availability of harmonized statistical data, in support of the integration and development programs, and will contribute to the application of international norms and methods to the specificities of African countries.

The development of continental harmonized guidelines on the collection of informal cross border trade statistics will help achieve this objective as all AU Member States will rely on this harmonized methodology to produce quality and comparable statistics on informal cross border trade. It will also help countries move towards a full coverage of international trade in goods transactions as defined in the Manual on International Merchandise Trade Statistics 2010 (IMTS 2010) and plug gaps in Balance of Payments and National Accounts statistics.

It is expected that these guidelines will lead to an improvement in the quality of AU Member States' merchandise trade statistics.

These guidelines have been developed under the Pan African Statistics Programme II.



Executive summary

These guidelines on measuring informal cross border trade (ICBT) are structured into four chapters.

The first chapter: **Conceptual framework on informal cross border trade** covers topics such as the definition of different concepts related to informal cross border trade, the scope of informal cross border trade, techniques of data collection, status of ICBT in Africa, and the valuation of ICBT transactions.

The second chapter: **Informal Cross Border Trade methodologies** details the two methodologies used to compile ICBT data in Africa. Those methodologies are the census method (full coverage) and the estimation method (coverage of a few crossing points, which are extrapolated to have an estimated value of ICBT flows at all crossing points).

The third chapter: **Data analysis** includes notes on data processing, tabulation, report writing, publication and dissemination.

The fourth chapter: **ICBT survey management** covers topics such as the institutional framework, the recruitment process and budgeting issues. It also addresses issues related to the responsibilities of fieldwork staff including enumerators and team leaders.

These guidelines also have three annexes. The first annex contains the model questionnaire for an ICBT survey. The second annex contains the proposed memorandum of understanding between stakeholder institutions on ICBT. The third annex presents a draft budget for the implementation of an ICBT survey.

1. Chapter 1: conceptual framework on informal cross border trade

1.1. Objectives of the Manual

The overall objective of this manual is to suggest a methodological approach to produce ICBT statistics and, in particular, to carry out surveys at the borders of AU Member States in order to supply both qualitative and quantitative information on informal cross border trade and assess the share of this sector in the international merchandise trade statistics (IMTS) and additionally in the gross domestic product (GDP) of these countries.

This manual will help harmonize data collection on ICBT in different Member States and will also take into account some of the ICBT data collection best practices already implemented across the continent. It will also come up with a recommended minimum set of indicators which should be produced by all Member States.

The ultimate goal of this manual is to provide Member States with a harmonized approach of collecting, compiling, and analyzing Informal cross border trade (ICBT) statistics. The manual will also help Member States to harmonize the institutional framework, metadata, publication, dissemination and other aspects that would lead to comparable statistics across all AU Member States.

1.2. Objectives of the Informal Cross Border Trade Survey

The following are the main objectives of this survey:

- Determining the direction of trade
- Estimating the values and quantities of ICBT flows
- Determining the composition of commodities transacted
- Determining the demographic and economic characteristics of traders
- Determining the uprating/extrapolating techniques of the collected ICBT data
- integrating the uprated ICBT data to the formal trade data
- Allowing for a comparative analysis of formal and informal trade

1.3. Scope of the ICBT Survey

The scope and coverage of this survey is threefold:

- The commodities to be recorded: Regarding commodities, all the goods entering or leaving the country, which have not been recorded by the customs should be recorded irrespective of the purpose (whether for sale or not). Exception is made on personal effects of travelers and illegal goods (which are difficult or almost impossible to record).
- The borders to be recorded: All transactions passing through official and unofficial borders or crossing points should be recorded. Where data collection cannot be conducted at all crossing points due to limited resources, a spatial extrapolation should be conducted.
- The days/months/years to be covered by the data collection: All transactions that take place all days of the week/month/years should be recorded. Where data collection cannot be conducted all days/weeks/months due to limited resources, a time extrapolation should be conducted.

To observe seasonal patterns in trading activities and cover the entire agricultural production cycle, year-round monitoring of informal cross-border trading activities is usually recommended. In addition, to be able to take into consideration trade variability within a month, two weeks, which need not necessarily be contiguous, are randomly selected for each of the 12 months. This is done with the restriction that each week of the month is sampled six times.

For instance, if you sample the first and the third week in January, you should sample the second and the fourth week in February and so on. Apart from randomizing the process, using this approach to select the weeks in which informal cross-border trading activities would be monitored helps to eliminate the possibility of enumerators and their supervisors influencing the activities of traders by staying too long at one point over a period of time. Programme discipline requires that, once the monitoring chart has been generated, it is strictly adhered to.

1.4. Definition of main concepts

1.4.1. Definition of informal cross border trade

Informal cross-border trade (ICBT) refers to transactions in goods and services between any two or more countries that are not entered in the official records and therefore not included in the official trade statistics.

Goods and services should be defined as per the Manual on International Merchandise Trade Statistics (IMTS) and the Manual on Statistics of International Trade in Services (MSITS).

The scope of this methodology is limited to trade in goods.

1.4.2. Economic territory

An economic territory is a geographical area on which the concept of residence is applied.

The economic territory of a country consists of:

- The geographic territory administered by a government and within which people, goods and capital can move freely; airspace, territorial waters;
- Territorial enclaves in the rest of the world (embassies, consulates, military bases, scientific stations, etc.);
- All the free trade zones, warehouses under customs and factories used by offshore companies under customs control.

The economic territory of a country does not include the territorial enclaves used by foreign governments or international organizations located physically within the geographical borders of the country.

Source: System of National Accounts (SNA 2008)

1.4.3. Resident

A resident is a unit (household or individual, enterprise, Government or non-profit organization) on the economic territory of a given country who has, on the given territory, a preponderant centre of economic interest, i.e., such a resident carries out or intends to carry out economic activities or relatively significant operations for a prolonged period, in general one year or more. *Source: System of National Accounts (SNA 2008)*

1.4.4. Non-resident

A non-resident is a unit whose main centre of economic activity is outside the economic territory and who does not intend to stay there for more than 12 months. Embassies, consulates and military bases (enclaves of foreign countries) and international organizations are non-residents. Thus, persons who live or intend to live for more than a year outside the country are considered as non-residents, regardless of their nationality.

Source: System of National Accounts (SNA 2008)

1.4.5. Smuggling

According to Cambridge dictionary, this concept refers to the act or process of taking things or people to or from a place secretly and often illegally.

Smuggling is mainly practiced due to three main reasons, which are:

- Avoiding paying taxes,
- Defying an imposed ban of export or import of legal goods (for instance ban of importation of cattle due to a disease, ban of export of commodity products – for instance rice due to shortage within the country, importing of petroleum products through illegal channels, etc.)
- Importation or exportation of illegal substances (firearms, narcotics, fake and pirated products, organ trafficking, illegal wildlife trade, etc.)

For statistical purposes, smuggling is split into two categories:

- Smuggling of legal goods either for tax avoidance or to defy an imposed ban. These transactions are part of ICBT.
- Smuggling of illegal goods (for instance firearms, narcotics, fake and pirated products, organ trafficking, illegal wildlife trade, etc.). These are neither part of formal trade nor part of ICBT.

1.4.6. Fraud

According to the Cambridge dictionary, fraud is defined as the crime of obtaining money or property by deceiving people.

In trade, fraud is referred to as any act by which a person deceives, or attempts to deceive, the Customs and thus evades, or attempts to evade, wholly or partly, the payment of duties and taxes or the application of prohibitions or restrictions laid down by Customs law or obtains, or attempts to obtain, any advantage contrary to Customs law, thereby committing a Customs offence.

1.4.7. Informal exports

Informal exports are outgoing merchandise flows to an immediate partner country on the surveyed border site from the economic territory of a country which is not registered by the customs authorities, regardless of the place where the merchandise was manufactured/produced.

These exports have to be valued FOB, i.e. including the transactional value of the merchandise and the value of services provided to deliver the merchandise to the border of the exporting country.

Source: Secretariat of the East African Community (EAC 2013)

1.4.8. Informal imports

Informal imports are incoming flows of merchandise from immediate partner countries at a border site to the economic territory of another country, such flows not having been registered by the customs authorities, regardless of the place where the merchandise was manufactured/produced.

Source: Secretariat of the East African Community (EAC 2013)

These imports are valued at CIF prices, which include the transactional value of the merchandise, the value of services rendered to deliver the merchandise to the border of the exporting country and the value of services carried out to deliver the merchandise from the border of the exporting country to the border of the importing country.

1.4.9. Destination country

The destination country, within the framework of surveys on informal cross border trade, means the immediate country where the merchandise enters at the time of crossing the border during the registration of informal commercial transactions.

Source: Secretariat of the East African Community (EAC 2013)

1.4.10. Country of origin

The country of origin means the immediate country from where the merchandise comes from at the time of crossing the border while registering informal commercial transactions.

Source: Secretariat of the East African Community (EAC 2013)

1.4.11. Border transit points and monitoring sites

A border transit point is a site that may or may not be classified between two or several partner countries where commercial transactions, both formal and informal take place. The monitoring sites, within the methodological framework, shall be the selected border transit points.

Source: Secretariat of the East African Community (EAC 2013)

1.5. Informal Cross Border Trade Decision Tree

Decision tree for determining ICBT transactions



- Part of travel services in cases they have been purchased during the trip abroad
- Not part of neither travel nor ICBT if the traveler had them before traveling

Note : whether good is going to the market or not, also wether trader is formally registered or not all is ICBT

This decision tree aims at facilitating the screening of cross border transactions in order to be able to easily (and in a harmonized manner) identify those that fall under ICBT.

1.6. ICBT Data Collection Techniques

Given the nature of ICBT, two main data collection techniques are used:

- Direct observation and measurement;
- Interview;
- Stock taking.

1.6.1. Direct observation and measurement

This technique involves structured observation of an activity, behavior, relationship, phenomenon, network, or process at the monitoring sites without necessarily depending on the willingness and ability of the traders to respond to questions.

The enumerators applying this technique should be strategically placed at loading/off-loading sites and border-crossing sites to record all informal goods entering or leaving the country without being recorded by customs authorities. Observation of large vehicle movements that might not have gone through customs procedures should also be conducted.

Generally, the enumerators should observe, assess, and record the type and quantity of goods being traded informally, by using the form which can either be in hard copy form or in soft copy contained in tablets.

The enumerators may, where necessary and possible, weigh goods to ascertain the quantity or volume of the goods being traded.

1.6.2. Interviews

The enumerators may, where necessary and possible, conduct individual or group interviews with the traders and/or other relevant personnel such as drivers and conductors, especially when there is need for further verification and clarification on the goods being traded and additional information.

1.6.3. Stock-taking

This technique should only be used at loading/off-loading sites (in particular open markets) along border areas where commodities moving in and out of a Member State are assembled or stored.

The enumerators should be strategically positioned at open border markets on well-known market days to randomly sample (or where possible, conduct a census) of informal cross-border trading activities. This involves getting the difference between the opening stock and closing stock of goods traded at the close of a market day to estimate the unrecorded trade brought to the market. This is after taking into consideration any possible replenishments in order to determine the transactions for the day.

Weekly and monthly import/export figures can then be derived from the market day estimates of the net stock changes. The details for this procedure must be determined by trade flow, volume of trade, storage structures used, frequency of active market days and perishability of the commodities.

To yield the best results from this technique, it is recommended that the enumerators build rapport with the relevant stakeholders at the markets (e.g., border trader associations, market and local leaders) to create a conducive environment for them to freely interact with cross border traders at the open market.

The major limitation of this technique is potential double counting as some of the information collected at the open market may have already been captured by enumerators stationed at the border crossings.

1.7. Valuation of ICBT transactions

As recommended by IMTS 2010, Exports are to be valued FOB (Free on Board) while Imports are to be valued CIF (Cost Insurance and Freight). However, given the fact that ICBT generally takes place between two neighboring countries, FOB and CIF value are in most instances equal.

Regarding the monetary valuation of the transactions, enumerators should use official exchange rates of involved currencies and convert the final value in the national currency (in case where foreign currencies have been used - mainly on imports).

For comparison purposes, statistical offices should produce tables in USD.

Note on exchange rate for conversion.

In accordance with the WTO Agreement on Customs Valuation (Article 9), it is recommended that:

"(a) Where the conversion of currency is necessary for the determination of the customs value, the rate of exchange to be used shall be that duly published by the competent authorities of the country of importation concerned and shall reflect as effectively as possible, in respect of the period covered by each such document of publication, the current value of such currency in commercial transactions in terms of the currency of the country of importation;

(b) The conversion rate to be used shall be that in effect at the time of exportation or the time of importation, as provided by each Member.

1.8. ICBT Product Nomenclature

It is impossible to come up with a single nomenclature that will be used by all the countries conducting ICBT surveys. This is because the level of aggregation is different, and some products have different names in different countries. Even at national level, products that are traded at one border are not necessarily the same as those traded in other borders.

To come up with a solution to this challenge, countries are given the flexibility of using their own product classification (based on the products traded in ICBT) and ensure that this list is matched with corresponding codes in the Harmonized System (HS). This will help in producing tables based on the HS even if data collection has used national product names.

1.9. Technology used in ICBT data collection

ICBT data collection, like any other survey, relies on well-designed data collection tools (questionnaire). This questionnaire may be used through different technologies.

These technologies offer many opportunities to expand the way we think of survey data collection, increasing the ways we can interact with survey respondents and expanding the range of stimulus material that can be used.

In this manual, we will focus on the most common technologies used: Paper Assisted Personal Interview (PAPI) and Computer Assisted Personal Interview (CAPI). The CAPI instrument must not only be a correct CAPI instrument, but also equivalent to the PAPI instrument.

Surveys conducted with computer-assisted methods can improve the quality of their data with range checks to flag possibly erroneous extreme data. This means that certain fields are presented conditionally, depending on prior answers. Furthermore, the possibility of entry checks during the process of data administration, computer-controlled skip and branch routines, seem to reduce item nonresponse with CAPI compared to traditional methods such as paper and pencil. In addition to this, CAPI will also make the processing of data faster as the dataset is readily available right after the end of the data collection period.

Based on the above advantages, it is strongly recommended to use CAPI in ICBT data collection. Other technologies such as video surveillance, software, satellite imagery, use of Geographical Information System (GIS) are also used in some instances. However, for ICBT survey, the implications of these new developments for survey data quality are yet to be fully understood.

1.10. State of Play of ICBT in AU Member States

During the process of developing these guidelines, a questionnaire was sent to all AU Member States to assess the status of ICBT data collection in these countries. The key results of this survey are detailed below.

47 countries responded to the questionnaire. 15 countries responded that they have conducted an ICBT survey at least once while 32 countries have never conducted any ICBT survey.

Methodology: Out of the 15 countries that have conducted ICBT survey at least once, 4 responded that they conduct a full coverage of all crossing points while 1 country responded that they apply estimation method.

Frequency of data collection: Out of the 15 countries that have conducted an ICBT survey at least once, 3 countries are collecting data once in a year (annual basis), 4 countries are collecting data every month (monthly basis) while others are collecting data on an irregular basis.

Integration of ICBT data in formal trade data: Out of the 15 countries that have conducted an ICBT survey at least once, 5 countries are integrating ICBT data into formal trade data while the remaining 10 countries are yet to integrate ICBT data into formal trade data.

Challenges faced by countries not conducting ICBT data: Most countries (28 out of 32) pinpointed a lack of financial resources as the main stumbling block to conduct ICBT survey in their respective countries. Lack of technical capacity and insecurity were also mentioned by few respondents.

1.11. Review of ICBT data collection practices in Africa

1.11.1. Cameroon

Cameroon has started to carry out surveys on informal cross border trade in 2013.

This process began in 2011 through monographs, then in 2013 a collection of statistical data on the volumes and values of cross-border trade, over a period of 15 days was carried out in the North and South regions.

Cameroon uses both econometric techniques and surveys (annual) to estimate ICBT transactions.

This exercise consists of estimating the total values and volumes exchanged over the entire territory with neighboring countries during the reference period concerned. This means that based on information collected over a period of two weeks, at the selected crossing points, an extrapolation will be done to have the estimated monthly volume and value.

This involves, for each crossing point, extrapolating the information collected over two weeks (14 days) over the reference period of two months concerned. Temporal extrapolation is done in following steps:

- Let Ji (i varying from 1 to 7) be a day of the week. Count the number on a calendar time (nor) that Ji returns during the two-month reference period;
- For each product (Pk) exchanged (in import or export) at this crossing during the two weeks of collection, calculate the average quantity (mi) traded during Ji days;
- The quantity of the product Pk exchanged at this crossing point is therefore, for any two-month period, the product of the quantity recorded on a given day of data collection (mi) and the number of corresponding days during the two-month period (nor).

Regarding data collection instruments, the transaction inventory sheet allows to record the summary of information on goods crossing the border. Specifically, it allows to describe each product which is subject of a transaction from the point of view of: the nature of the transaction (importation, export); the designation (product name); unit, unit quantity, weight (in kg), mode of transport; the country of origin or the country of destination. The value (in F CFA) of the product will be evaluated based on the price collection sheets.

The Institut National de la Statistique (National Institute of Statistics) is the responsible institution for conducting this survey.

1.11.2. Rwanda

The government of Rwanda launched a study on informal cross border trade in 2009 to complement formal trade statistics compiled through customs authorities and other complementary administrative data sources. The pilot ICBT survey was conducted from May to December 2009. The pilot covered 13 borders. Since then, the study grew up into a fully-fledged survey covering 7 months in 2010 and 10 months in 2011. Starting by January 2012, Rwanda started to carry out surveys on a regular monthly basis from 2012 onwards.

18 official borders and 39 crossing points (non-gazetted borders) are covered by the survey along the border with four neighbouring countries (Burundi, DR Congo, Tanzania, and Uganda). At each crossing point, between two and 6 enumerators are deployed to ensure full data collection of all eligible transactions.

Until 2009, Rwanda was conducting data collection using paper and pen. However, since 2016, Rwanda has introduced data collection with tablets (computer assisted personal interview) to ensure that the data is automatically sent to the servers and supervision of enumerators can be partially done remotely.

This is a joint activity between the National Institute of Statistics of Rwanda, the National Bank of Rwanda, the Ministry of Trade and Industry, the Ministry of Agriculture and the Rwanda Revenue Authority.

It is worth noting that Rwanda is the only country that is covering all the eligible crossing points during the whole year.

1.11.3. Uganda

Uganda started carrying out surveys on informal cross border trade in 2005 but the survey took proper shape in 2014. These surveys were conducted jointly with the Bank of Uganda (BOU) and the Uganda Bureau of Statistics (UBOS)¹. The surveys aimed to improve the foreign trade statistics for the BOU and the national accounts. Uganda covers 20 border posts in ICBT data collection. In general, the choice of border posts was guided by a certain number of factors, in particular the volume of commercial exchanges recorded by the Customs department, security, transport and communication links, and the availability of support institutions like the Uganda Tax Authority, the Ugandan police, and other security agencies and immigration bureaus. Eight of the border posts share a border with the Democratic Republic of Congo, four with Kenya, three with Rwanda, and two with South Sudan and Tanzania.

In addition to the 20 border posts, the census enumerators collected data from four (4) bus terminals which are the points of departure and arrival of buses going to and coming from neighbouring countries. The four bus terminals covered were Kampala/Kigali, Kampala/Juba, Kampala/Bujumbura and Kampala/Bukoba/Dar es Salaam.

Data collection is carried out over a period of two consecutive weeks in a given month and estimations are made to cover the entire month. At the time of border surveillance, enumerators observe and record all the merchandise entering and leaving the country between 7 am. and 18 pm. The number of enumerators deployed at a border post varies between two (2) and six (6), depending on the volume of trade. The main method of data collection was direct observation, with occasional interaction with the traders whenever clarifications about the goods they were transporting were required. Local units of measurement of quantity were established for the main articles traded, even though enumerators sometimes weighed articles to check real quantities. These units were aligned with standard units according to the tariff nomenclature to integrate data with that collected by the formal customs system.

The 2019 report outlines the three limitations of the study to be kept in mind:

- 1. The survey did not cover all the exit and entry points in the country, implying that the volume of informal cross border flows may have been under-estimated;
- 2. Trading at night and beyond the stipulated monitoring time (7 am. to 6 pm.) was not covered;
- **3.** The goods grouped together and packed could not be evaluated accurately, in particular when the packaging was not transparent. The same holds true for products transported in bulk, such as sugarcane and fruit.

¹ The Informal Cross Border Trade surveys report 2019. The Uganda Bureau of Statistics (UBO) and the Bank of Uganda (BOU), December 2020

1.11.4. Zambia

Zambia started data collection on ICBT in 2019. The borders to be monitored were selected based on the high concentration of informal trade transactions, availability of supporting institutions and good road network.

Based on this approach the following borders were selected: Mwami – Mchinji (Zambia – Malawi), Chirundu (Zambia–Zimbabwe), Kasumbalesa (Zambia – Democratic Republic of the Congo) and Nakonde – Tunduma (Zambia – United Republic of Tanzania).

Currently, ICBT data published by Zambia only covers the above mentioned 4 borders out of the total 34 borders. However, data collection at the four borders is conducted as a census, meaning that data is collected for the whole month (all days).

In this exercise, Zambia Bureau of Statistics has been sponsored (financial and technical support) by the COMESA Secretariat through different projects including the EDF - 11 European Development Fund.

1.12. Summary of methodologies described above

The methodologies listed above cover, for the most part, border monitoring (data collection) for two weeks per month. Other methodologies consisted of one-time surveys or interviews with resource persons and key players in informal cross border trade.

Methodology	Countries or regions	Reliability and Constraints
Continuous monitoring of all borders on a regular basis	Rwanda (since 2012)	Reliable but difficult to implement due to high survey costs
Partial monitoring in time and space	Cameroun, Uganda, Zambia,	Reliable in case good estimation methods are applied. Also requires strong fieldwork organisation and supervision to ensure.

Table 1: Recap of methodologies and degree of reliability

1.13. Limitations of methodologies described above

The main limitations of the data collection methods were:

- Poor representativeness of transit points selected to follow informal cross border trade for several reasons, such as cost and logistic constraints which were not conducive to an exhaustive study of all the sites, the choice of so-called experts who tended to underestimate/overestimate trade flows at the transit points;
- Most of the collection was carried out during the day during working hours (7 am. to 6 pm.) whereas a substantial volume of trade takes place at night, thereby impairing the quality of informal cross border trade estimates;
- Interference by customs officers at the time of interviews;
- Data collection carried out for one week (7 days) or two weeks (14 days) every month, whereas extrapolation methods were used to calculate the gross amount for the remaining days, assuming that trade volumes were stable, thereby impairing the informal cross border trade estimates.

2. Chapter 2: Methodology for measuring ICBT

This chapter describes the methodology used to measure the transactions recorded under informal cross border trade.

It is ideal to identify all crossing points and carry out a complete enumeration of activities. This ideal method would be to carry out a systematic exhaustive collection, i.e., at all the sites and always. But it is obvious that such an approach would be very expensive from all points of view.

Therefore, owing to logistics problems and the attendant cost implications, this is not usually feasible, and a purposive sampling of sites to be monitored is usually carried out. Reconnaissance visits or border profiling usually precede the selection of border sites to be monitored.

The main takeaway of these experimental approaches is the necessity to suggest a process which reconciles these different approaches, considering the resource availability constraints.

It is against this background that the three following methodologies are proposed:

- Census method;
- Estimation method;
- Econometric model.

2.1. Census (Full coverage)

This methodology consists of observing all the gazetted and non-gazetted crossing points on days of the week/month/year to come up with total imports and exports through ICBT.

If well implemented, this methodology will provide the next to accurate ICBT estimates.

It requires strong fieldwork organisation and serious supervision (both on-field and remote—in case technology is used in data collection)

However, given the fact that this methodology is expensive, very few countries can implement it.

2.2. Estimation method (based on selected crossing points and selected weeks of data collection)

This methodology consists of collecting data during one or two weeks at selected crossing points and then extrapolating the monthly ICBT estimates.

Given the size of certain countries (quite a high number of crossing points) and available financial resources, this method is the most realistic to be implemented by most countries.

It also requires strong fieldwork organization and serious supervision (both on-field and remote — in case technology is used in data collection)

In addition to that, it also requires advanced estimation techniques that have to take into account the selection of crossing points and seasonality issues.

2.2.1. Selection of crossing points to be monitored

Since the sample size of crossing points to be monitored depends on the available resources (available resources for data collection), two sampling methods are advised: **Stratified sampling** and **purposive sampling**.

In a stratified sample, researchers divide a population into homogeneous subpopulations called strata (the plural of stratum) based on specific characteristics (example: stratifying borders by neighboring countries, stratifying borders by whether they are gazetted or not etc.). Every member of the population studied should be in exactly one stratum.

Each stratum is then sampled using another probability sampling method, such as cluster sampling or simple random sampling, allowing researchers to estimate statistical measures for each subpopulation.

Researchers rely on stratified sampling when a population's characteristics are diverse and they want to ensure that every characteristic is properly represented in the sample. This helps with the generalizability and validity of the study, as well as avoiding research biases like under coverage.

Purposive sampling refers to a group of non-probability sampling techniques in which units are selected because they have characteristics that you need in your sample. In other words, units are selected "on purpose" in purposive sampling.

Also called judgmental sampling, this sampling method relies on the researcher's judgment when identifying and selecting the individuals, cases, or events that can provide the best information to achieve the study's objectives.

Purposive sampling is best used when you want to focus in depth on relatively small samples. Perhaps you would like to access a particular subset of the population that shares certain characteristics, or you are researching issues likely to have unique cases.

The main goal of purposive sampling is to identify the borders you need to select. For this reason, purposive sampling works best when you have a lot of background information about your research topic. The more information you have, the higher the quality of your sample.

To illustrate how the two methods can be applied, here are the steps to follow:

- List all the crossing points (official and unofficial borders) across the border;
- Group the crossing points by neighboring country;
- Rank the crossing points by flow of goods (you may rely on customs data or migration flows data to determine which borders have got the highest movements);
- Depending on the available budget, you know the number of crossing points that can be covered by the budget;
- Select the crossing points by choosing the crossing point with higher movement/transactions with each neighbor (For instance, if you have four neighboring countries, and you have a budget for two crossing points, you will choose one crossing point for the neighboring country with the highest transactions, and then one crossing point for the second neighboring country).

2.2.2. Formulas to be applied to come up with estimations

As data collection only covers two weeks in a month, it is necessary to estimate informal cross border trade flows and volumes for the remaining weeks. The generally used estimation method is the updating technique. This technique is based on two main hypotheses:

H1 Supply and demand of industrial goods are constant on both sides of the border for the entire month.

H2 Supply and demand of agricultural goods fluctuate depending upon the day of the week. Supply of such products also depends on the season, whether sowing or harvesting. As a result, average flows or volumes (imports/exports) for a given day of a week, for instance Monday, are multiplied by the number of times Monday occurs in a month.

Demonstration of the estimation methods

The estimation methods in this section are based on the approaches used by the Bank of Uganda and Uganda Bureau of Statistics to generate estimates based on the ICBT data collected during the survey period.

The Up-Rating Model

The up-rating model is based on the following assumptions:

The supply for industrial products and other products from either side of the borders is fairly constant throughout the month while the supply of agricultural products fluctuates depending on the season and on whether a given day is a market day or not.

Trade transactions through the unmonitored crossing points in the neighborhood of the monitored border stations are estimated individually based on qualitative monthly reports that are compiled by supervisors

The average value of flows (imports/exports) for a day of the week, say Tuesday is multiplied by the number of times Tuesday occurs in a month. The procedure is repeated for all the days of the week and a sum of the values estimated to get the monthly estimates.

Based on assumption (a) above of constant trade flows for industrial and other products, the total value of inflows/outflows of industrial products and other products for a given month is equivalent to the average daily values of industrial and other products from survey figures multiplied by the number of days in a given month as shown in Equation 1:

$$A_i = n\mu_i \tag{1}$$

Where, A_i is the monthly value estimates for the month in question/consideration, n is the number of days in a given month and μ_i is the daily average of value of industrial and other products monitored during the month, i represents a month of survey

Therefore, the aggregate estimated value of inflows/outflows during the survey period is the sum of the estimates of the months that were monitored for ICBT data collection as presented in Equation 2:

$$A_T = \sum_{i=1}^{t} A_i = \sum_{i=1}^{t} n \,\mu_i$$
 (2)

Where, A_T represents the total value of exports/imports of the industrial and other product categories that passed through the data collection points traded during the ICBT survey period, t is the total number of months monitored (with a maximum value of 12 for a year)

Based on the assumption of constant supply, the total value of inflows/outflows for a given month having ni days and a daily average value of manufactured and other products of Mi is given as Ai and estimated as follows:

Assumption (c) is taken into consideration in uprating informal trade flows of agricultural and other agricultural products during the months of survey. Consequently, the monthly aggregate of agricultural trade flows is expressed as the sum of product of the number of particular days in a month and the average imports/exports for the day of the week. This is given by:

$$B_J = d_j \psi_j \tag{3}$$

Where, B_J is the monthly total value of trade for a given day (say Monday in a month). This total is for agricultural exports/imports of the concerned day, Mondays in our case) d_j represents the number of particular days in a month, say four Mondays in April and ψ_j is the daily average value of agricultural exports/imports of a given day computed from the observed trade figures, j represents the day of the week, i.e., Monday, Tuesday, ..., Sunday.

Therefore, the monthly informal agricultural exports/imports aggregates for all days in a month are estimated as:

$$B_T = \sum_{j=1}^7 B_j = \sum_{j=1}^7 d_j \psi_j$$
 (4)

The summation of the monthly totals for the twelve months gives the aggregate informal (unrecorded) agricultural flows. This is illustrated in equation 5:

$$B_{A} = \sum_{k=1}^{t} B_{T} = \sum_{k=1}^{t} \sum_{j=1}^{7} d_{j} \psi_{j} \quad (5)$$

Where, B_A represents the estimated total value of informal exports/imports of the agricultural products traded during the months of ICBT data collection, k represents the particular month being monitored and t stands for the months monitored in a year and assumes a maximum value of 12.

The up-rated estimate of ICBT (exports/imports), V_M along the monitored sites is given by the summation of equation (2) and (5):

$$V_M = \sum_{i=1}^t n_i \mu_i + \sum_{k=1}^t \sum_{j=1}^7 d_j \psi_j$$
 (6)

However, the value of trade transactions through the unmonitored crossing points, V_{U} , in the neighbourhood of a monitored border station could be estimated individually based on qualitative monthly reports that emanate from fieldworkers. This could be done using the following formula:

$$V_U = \phi \left[\sum_{i=1}^t n_i \, \mu_i + \sum_{k=1}^t \sum_{j=1}^7 d_j \, \psi_j \right]$$
(7)

Where, $0 < \phi < 1$ indicating that the value of ϕ lies between 0 and 1 and assumes values such as 0.1 (10%), 0.25 (25%), 0.8 (80%) and so on, depending on the level of ICBT activities relative to the monitored border station

Consequently, the total up-rated value of ICBT flows is given by the summation of Equation (6) and (7):

$$T = \sum_{i=1}^{t} n_i \mu_i + \sum_{k=1}^{t} \sum_{j=1}^{7} d_j \psi_j + \phi \left[\sum_{i=1}^{t} n_i \mu_i + \sum_{k=1}^{t} \sum_{j=1}^{7} d_j \psi_j \right]$$
(8)

Linear interpolation model

This model is used to estimate the intermediate terms of a sequence of which some particular terms are known.

To do this, consider the line defined by the two points (X_0, Y_0) and (X_1, Y_1) , and a third point to be determined (X, Y) is expected to lie on this line only if the following relation holds:

$$\frac{Y_1 - Y_0}{X_1 - X_0} = \frac{Y - Y_0}{X - X_0} \tag{9}$$

Suppose that the value of X is known, as we are expected to have measured it, Y can be estimated by solving for it from equation (9) above as follows:

$$Y = \frac{(Y_1 - Y_0)(X - X_0)}{(X_1 - X_0)} + Y_0$$
(10)

By expanding equation (10) and re-arranging:

$$Y = \left(\frac{X - X_0}{X_1 - X_0}\right) Y_1 + \left(1 - \left(\frac{X - X_0}{X_1 - X_0}\right)\right) Y_0 \tag{11}$$

Equation (11) can be rewritten as:

$$Y = \alpha Y_1 + (1 - \alpha) Y_0 \tag{12}$$

Where
$$\alpha = (X - X_0)/(X_1 - X_0)$$
 (13)

Equation (12) is the linear interpolation model, while α in equation (13) is the interpolation factor.

Linear extrapolation model

The linear projection model assumes that there are no sudden or dramatic changes occurring in the conditions affecting growth during the period under review.

This is expressed in mathematical terms as follows:

$$Y_{t+n} = Y_t + bn \tag{14}$$

Where, Y_{t+n} is the value of the trade flow being projected, n units from time t; Y_t is the recent value of the historical data at the starting point of projection at time t; b is the average amount of growth or decline per unit of time; n is the number of units of time (e.g., months, weeks, years, etc.)

To use model (14) above, b is estimated using the following formula:

$$b = \sum_{t=1}^{m} \frac{(Y_t - Y_{t-1})}{m}$$
(15)

Where m is the historical interval over which the average growth is calculated; Y_{t-1} is the level of

Y one time period before Y_t .

Source: UNECA – AUC- AFREXIMABANK Continental Methodology for Informal Cross Border Trade (ICBT) Data Collection in Africa Considering hypothesis H1, industrial goods and other types of goods have constant flows for a month of n days with an average value of trade β_i . Thus, the total value of incoming or outgoing flows or volumes of industrial goods and other goods in a month is:

$$A_i = n \times \beta_i \quad (1)$$

Where *n* represents the number of days in a month, β_i the average value of industrial goods and other goods for the days checked in the month. Consequently, the total value of incoming and outgoing flows and volumes of industrial goods and other goods over a period of 12 months of collection shall be:

$$A_T = \sum_{i=1}^t n \times \beta_i \tag{2}$$

Where i is the collection month, t represents the number of months monitored. t = 12, if collection is carried out in all the 12 months of the year.

To estimate the flows or volumes of agricultural products, it is assumed that the total monthly informal agricultural trade flows or volumes is expressed as the sum of the product of the number of specified days in a month and the average of flows and volumes for that day of the week. Or,

$$B_j = d_j \times Y_j \quad (3)$$

With d_j being the number of specified days in a month (in the month of January, for example, we have four Mondays) and Y_j the average daily value of flows and volumes of agricultural products. B is the total monthly value of flows or volumes of agricultural products for a given day.

The total value of informal cross border trade of agricultural products for all the days of a month is:

$$B_t = \sum_{j=1}^s d_j \times Y_j \qquad (4)^2$$

Where *j* is a given day of the week.

By adding the total monthly values B_T from the first to the twelfth month of data collection

$$B_T = \sum_{k=1}^t B_k$$
(5)
$$B_T = \sum_{k=1}^t \sum_{j=1}^s d_j \times Y_j$$
(6)

 B_T is the estimated annual value of flows or volumes of agricultural products sold at the borders by the informal sector.

The total annual value of flows (imports or exports) or volumes of informal cross border trade of goods is thus

$$V_T = A_T + B_T$$
 (7)
Or:

$$V_T = \sum_{i=1}^t n \times \beta_i + \sum_{k=1}^t \sum_{j=1}^s d_j \times Y_j$$
(8)

² The recommended methodology advises countries to collect data for a minimum 14 days per month (at least two days for each calendar day: Monday, Tuesday, Wednesday, etc.). For countries that will be collecting data once in a quarter or once in a semester, the recommendation is to carry forward the data from the latest month with data (in practice this means that the data collected in January for example will be multiplied by 3 to have quarterly estimates or multiplied by 6 to have semestrial estimates).

2.3. Use of econometric models

The use of econometry allows for an estimation of informal trade established by formally registered traders.

This approach is based on the premise that surveys which play an important role in measuring commercial data tend to concentrate on the recording of flows of small informal traders. Now, large scale informal trade is carried out by officially registered traders. To record this, one can use instead an econometric analysis of formal trade data.

What is required in practice is to look for the linkages pertaining to the differences between the values and quantities of formal imports and exports of a country and its trade partners on the one hand, and the tax receipts resulting from such transactions as well as the tax rate in force on the other.

Any tax evasion observed through this method is imputable to informal trade.

2.4. Minimum content of the ICBT survey questionnaire

The survey questionnaire may differ from country to country. However, any questionnaire should have the following minimum variables:

- Date of recording;
- Questionnaire Identification Number;
- Crossing Point name and code;
- Product name;
- Quantity;
- Unit code (with product's corresponding supplementary unit);
- Unit Price;
- Country of destination (for exports);
- Country of Origin (for imports);
- Means of transport;
- Name of enumerator;
- Gender of the trader;
- Age group of the trader;

The following are the most common units of measure that are used in recording informally traded merchandise:

Weight:	Kilograms (kg)
	Carat (carat)
Length:	Metres (m)
Area:	Square metres (m2)
Volume :	Cubic metres (m3)
	Litres (I)
Number (units):	Pieces/items (u)
	Pairs (2u)
	Dozens (12u)
	Thousands of pieces/items (1,000u)
	Packs (u (set/pack))

In ICBT, the modes of transport are either land or water. Regarding the means of transport, the following are generally used:

- Motorcycles
- Vehicles
- Bicycles
- Pushcart
- Boat/canoe
- Wheelchair
- Tricycle
- Head or hand.



Chapter 3: Data analysis (processing, cleaning and tabulation), publication and dissemination

3.1. Impact of data Data collection tools on data processing

The level of technology used in data collection affects data processing processes.

Where data collection is conducted by using **Computer Assister Personal Interviews (CAPI)**, data processing is made easier because most of the data quality checks are implemented at data collection level and some processes (like currency conversion, codification, correlation tables) are done automatically. In addition to that, data is automatically synchronized to the server, which makes it easier for supervisors to regularly monitor the collected data.

Finally, CAPI will also provide a raw dataset right after the end of the data collection exercise.

Where data collection is conducted by using **paper-based data collection (PAPI)**, it comes with heavy logistical workload (regular distribution of new questionnaires, regular returning of filled in questionnaires) and additional technical workload which requires additional resources and time (codification and data entry). In addition, using PAPI may entail processing errors especially in relation to data entry.

Another technology used in data collection is called remote sensing. **Remote sensing** is the process of detecting and monitoring the physical characteristics of an area or an object from a distance and without physical contact. The application of remote sensing involves a wide variety of technologies from state-of-the-art satellites to contactless thermometers. Recent technological advancements have made powerful sensing instruments a fundamental part of modern-day society, including GPS, aerial photography, aircraft radar, and autonomous vehicle laser scanners. In the context of surveys like ICBT survey, remote sensing may not provide all the information (prices of commodities, and the identification of the exact commodities may be difficult, etc.)

Irrespective of the technology used, this stage should produce a raw database available for cleaning. When designing a data entry template, the developers should ensure that the data entry template has automatic control checks (skips where necessary, checking of valid codes, checking of outliers, etc.) that will minimize errors.

3.2. Data Processing

Data processing is the process of translating it into usable information. It is usually performed in a step-by-step process conducted by statisticians. The raw data is collected, filtered, sorted, processed, analyzed, stored, and then presented in a readable format.

Data processing is essential for organizations to create better business strategies and increase their competitive edge. By converting the data into readable formats like graphs, charts, and documents, employees throughout the organization can understand and use the data.

Generally, there are six main steps in the data processing cycle:

Step 1: Collection: The collection of raw data or gathering of collected data is the first step of the data processing cycle. The type of raw data collected has a huge impact on the output produced. Hence, raw data should be gathered from defined and accurate sources so that the subsequent findings are

valid and usable. Raw data can include monetary figures, website cookies, profit/loss statements of a company, user behavior, etc.

Step 2: Preparation: Data preparation or data cleaning is the process of sorting and filtering the raw data to remove unnecessary and inaccurate data. Raw data is checked for errors, duplication, miscalculations or missing data, and transformed into a suitable form for further analysis and processing. This is done to ensure that only the highest quality data is fed into the processing unit.

The purpose of this step is to remove bad data (redundant, incomplete, or incorrect data) with a view to assembling high-quality information so that it can be used in the best possible way.

Step 3: Input: In this step, the raw data is converted into machine readable form and fed into the processing unit. This can be in the form of data entry through a keyboard, scanner or any other input source.

Step 4: Data formatting. In this step, the raw data is subjected to various data processing methods using appropriate software to generate a desirable output. This step may vary slightly from process to process depending on the source of data being processed (online databases, connected devices, etc.) and the intended use of the output.

Step 5: Output: The data is finally transmitted and displayed to the user in a readable form like graphs, tables, vector files, audio, video, documents, etc. This output can be stored and further processed in the next data processing cycle.

Step 6: Storage: The last step of the data processing cycle is storage, where data and metadata are stored for further use. This allows for quick access and retrieval of information whenever needed, and allows it to be used as input in the next data processing cycle directly.

There are different types of data processing based on the source of data and the steps taken by the processing unit to generate an output. There is no one-size-fits-all method that can be used for processing raw data.

However, there are three main data processing methods - manual, mechanical and electronic.

Manual Data Processing: This data processing method is handled manually. The entire process of data collection, filtering, sorting, calculation, and other logical operations are all done with human intervention and without the use of any other electronic device or automation software. It is a low-cost method and requires little to no tools, but produces high errors, high labor costs, and lots of time and tedium.

Mechanical Data Processing: Data is processed mechanically through the use of devices and machines. These can include simple devices such as calculators, typewriters, printing press, etc. Simple data processing operations can be achieved with this method. It has much lesser errors than manual data processing, but the increase of data has made this method more complex and difficult.

Electronic Data Processing: Data is processed with modern technologies using data processing software and programs. A set of instructions is given to the software to process the data and yield output. This method is the most expensive but provides the fastest processing speeds with the highest reliability and accuracy of output.

3.3. Data Cleaning

This stage is very critical as it deals with coming up with a clean dataset that will be used to produce report tables.

In data cleaning, analysts deal with removing duplicates (if any), converting data types, dealing with missing data, dealing with outliers, among other things. It is at this stage that correlation tables are checked to ensure that the output will be consistent.

This stage must be conducted in a systematic way. The use of efficient statistical software is recommended. This manual recommends the use of Stata.

While the techniques used for data cleaning may vary according to the types of data statistical offices, you can follow these basic steps to map out a framework for your organization.

Step 1: Remove duplicate or irrelevant observations: Remove unwanted observations from your dataset, including duplicate observations or irrelevant observations. Duplicate observations will happen most often during data collection. When you combine data sets from multiple places, scrape data, or receive data from respondents (providers of statistical information), there are opportunities to create duplicate data. De-duplication is one of the largest areas to be considered in this process.

Irrelevant observations are when you notice observations that do not fit into the specific problem you are trying to analyze. For example, if you want to analyze data regarding millennial customers, but your dataset includes older generations, you might remove those irrelevant observations. This can make analysis more efficient and minimize distraction from your primary target—as well as creating a more manageable and more performant dataset.

Step 2: Fix structural errors: Structural errors are when you measure or transfer data and notice strange naming conventions, typos, or incorrect capitalization. These inconsistencies can cause mislabelled categories or classes. For example, you may find "N/A" and "Not Applicable" both appear, but they should be analyzed as the same category.

Step 3: Filter unwanted outliers: Often, there will be one-off observations where, at a glance, they do not appear to fit within the data you are analyzing. If you have a legitimate reason to remove an outlier, like improper data-entry, doing so will help the performance of the data you are working with. However, sometimes it is the appearance of an outlier that will prove a theory you are working on. Remember: just because an outlier exists, doesn't mean it is incorrect. This step is needed to determine the validity of that number. If an outlier proves to be irrelevant for analysis or is a mistake, consider removing it.

Step 4: Handle missing data: You can't ignore missing data because many algorithms will not accept missing values. There are a couple of ways to deal with missing data. Neither is optimal, but both can be considered.

As a first option, you can drop observations that have missing values, but doing this will drop or lose information, so be mindful of this before you remove it.

As a second option, you can input missing values based on other observations; again, there is an opportunity to lose integrity of the data because you may be operating from assumptions and not actual observations.

As a third option, you might alter the way the data is used to effectively navigate null values.

Step 5: Validate: At the end of the data cleaning process, you should be able to ensure that the data is consistent, accurate and complete.

3.4. Main tables to be produced for comparison purposes

Once data cleaning has been completed, analysts will come up with tables that they deem necessary. These tables may be different from country to country but there is a minimum list of tables that is mandatory for all the countries for comparison purposes.

Here is a list of compulsory tables to be produced:

- 1. Total ICBT Imports and Export flows
- 2. ICBT Exports by Country of Destination
- 3. ICBT Imports by country of Origin
- 4. Flows (imports and exports) by trading partner
- 5. Top 10 Major Exports
- 6. Top 10 Major imports

3.5. Publication and dissemination

It is acknowledged that the frequency of data collection may differ from country to country, which may also lead to different frequency of publications. However, it is recommended that each country should at least produce an ICBT report on a quarterly basis. Ideally, the report should be published no later than 30 days after the end of the month.

The National Statistical Offices should use their respective dissemination strategies to disseminate ICBT surveys. This may include dissemination via official website, social media (X-Twitter, Facebook, Instagram, Flickr, etc.), STATAFRIC social media and official website, etc.

To ensure good dissemination, the following should be taken into account:

Map your audience: Specify who exactly you want your research results to reach, for which purposes, and what their general characteristics might be (e.g., policy makers, regional and international organizations, academia, etc.).

Having a deeper contextual understanding of your audience can make a real difference to the success of your engagement practices (Who is most affected by your research? Who might find it most valuable? What is it that you want them to take away?).

Get to know your target audiences, their needs and expectations of the research outcomes, as well as their preferred communication channels to develop a detailed understanding of their interests and align your messages and media with their needs and priorities. Keep in mind, too, that intermediaries such as journalists or science communication organisations can support or mediate the dissemination process.

Target and frame your messages: Target and frame the key messages that you want to communicate to specific groups. Think first from the perspective of what they might want or need to hear from you,

rather than what you want to tell them. Choosing media and format of your communication strongly depends on your communication objectives, i.e., what you want to achieve.

There are many ways to communicate your research; for example, direct messages, blog/vlog posts, tweeting about it, or putting your research on Instagram. Form and content go hand in hand. Engage intermediaries and leverage any relevant existing networks to help amplify messages.

Create a dissemination plan: Many statistical surveys require a dissemination plan. A dissemination plan must address: the purpose of the outreach, the audience for the outreach, the message or messages to be shared, the methods for sharing the messages, the timing for the outreach, and the process for evaluating the success of the dissemination effort.

Think visual: Dissemination of research is still largely ruled by the written or spoken word. However, there are many ways to introduce visual elements that can act as attractive means to help your audience understand and interpret your research. Disseminate findings through art or multimedia interpretations.

Graphic representation of quantitative information reaches back to 'earliest map-making and visual depiction. As technologies have advanced, so have our means of visually representing data.

If your data visualizations could be considered too technical and not easily understandable by a nonexpert reader, consider creating an ad hoc image for this document; sometimes this can also take the form of a graphical abstract or infographic. Use online tools to upload a sample of your data and develop smart graphs and infographics.

4. Chapter 4: ICBT survey management

4.1. Institutional arrangements

It is important that there is good synergy between stakeholders institutions. For this to be achieved, a memorandum of understanding (clearly detailing which institution is going to do what and when) must be signed. This memorandum should be renewed every three to five years.

In addition to that, stakeholders institutions should nominate members of both the steering committee (managerial level) and technical committee (technical level). These committees will play a critical role in managing the survey from start to finish.

To be able to conduct and efficient and effective ICBT survey, Member States should consider the following institutional frameworks:

- Administrative Coordination aspects: Generally, official borders are managed by the Migration Office in collaboration with the Police and Customs. To ensure that the survey goes smoothly, these institutions should be informed and be involved in the day-to-day onsite management of the enumerators involved in the data collection exercise.
- Technical Coordination aspects: The technical coordination aspects are twofold:
- **Steering committee**: Made of senior managers of the institutions involved in the technical work (National Statistical Offices, Central Bank, Ministry of Trade, Customs, and other relevant institutions). The role of this committee is to provide a strategic management of the survey.
- Technical committee: This committee is made of technical staff from the institutions involved in the technical work (National Statistical Offices, Central Bank, Ministry of Trade, Customs, and other relevant institutions). The role of this committee is to manage the day-to-day technical aspects of the work (training enumerators, supervision, data analysis, report writing, etc.)
- Memorandum of Understanding: The purpose of the memorandum of understanding is to clearly define the roles and responsibilities of each stakeholder institution (administrative, financial contribution, technical contribution etc.) The MoU should also contain an indicative budget that will be used during the survey.

4.2. Budgeting

Budgeting is an important aspect of the survey. Members of the technical committee will draft a budget and ensure that this budget is as exhaustive as possible. The budget will then be approved by the steering committee.

Annex II is an indicative budget that can be customized.

4.3. Recruitment of field staff

The recruitment of the enumerators should be conducted at regional level. Enumerators should be from the regions near the respective crossing points. The advantages of recruiting local enumerators in ICBT include the fact that they already know the dynamics of the border crossing, they speak the language and are most likely to be comfortable to work in that area compared to enumerators who may be recruited from afar.

Another criterion is the level of education. Enumerators should have a minimum of High school degree.

These enumerators should be trained extensively to be able to perform their duties effectively.

4.4. Responsibilities of different interveners

4.4.1. Responsibilities of the technical team

The technical team will assume the day-to-day management of the survey and make sure that every step is well performed, and they will report to the heads of the stakeholders institutions.

The following are major responsibilities of the technical team:

- Plan and budget for the survey
- Prepare technical documents of the survey
- Conduct enumerators training
- Follow up on all logistical and financial aspects of the survey (survey materials, salaries, etc.)
- Regular follow up of fieldwork activities including management of enumerators and data curation.
- Handle all field related challenges and problems.
- Data analysis (processing, cleaning, tabulation, and report writing)
- Keep updating the methodology by aligning with international standards.

4.4.2. Responsibilities of the enumerators

The following are major responsibilities of the enumerators:

- Master all the aspects of the training package.
- To create a good impression and cooperation with respondents.
- Cooperate with other governments agencies at border/crossing points.
- To ensure that the information provided is kept confidential and is used for statistical purposes.
- To fill the questionnaire as required with due diligence.
- Report any information that can hinder the survey to the technical committee.
- Seek for guidance from the technical team in case of unusual circumstance such as change in border operations regulations, etc.
- Keep the survey material in good conditions.
- Observe working hours

4.5. ICBT Survey steps to be followed by NSOs and their stakeholders

The following are the suggested steps to be followed by countries planning to start conducting ICBT surveys:

- Mobilization of resources
- Putting in place institutional framework of institutions that will be involved
- Conducting a meeting of the technical working group (to discuss technical aspects of the survey including finalization of the questionnaire, calendar of activities, recruitment of enumerators, listing of all crossing points, data collection strategies, etc.)

- Recruitment of enumerators
- Training of enumerators for profiling (listing of crossing points)
- Listing of all crossing points
- Sampling of crossing points to monitor (in case of potential use of the estimation method)
- Finalization of the questionnaire
- Finalizing logistical prerequisites (preparation of training venues, transport, airtime, printing (for paper-based data collection), procuring and installing tablets (in case of CAPI data collection)
- Development of a data entry system and readying the server to be used
- Training of enumerators on data collection
- Distribution of data collection materials
- Prepare data entry environment (for PAPI)
- Recruitment of data entry clerks (for PAPI)
- Organizing a data analysis team (mainly trade statisticians and supporting IT team)
- Producing a survey report (at the end of data analysis)
- Disseminating the report

5. Bibliography

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6. Annexes

6.1. Annex 1: Model questionnaire

REPUBLIC OF XXXXXXXXXXXXXX

xxxxxxxxxxx Bureau of Statistics

Questionnaire number	r : _	_			
Interview date: I	1 1	1		1	

Enumerator's Name :.....

INFORMAL CROSS BORDER TRADE SURVEY

Qu Dat	estionnaire nur æ :	nber : - _	_	_								
Nai	me of enumera	tor :										
Nai	me of superviso	or:										
						2. IDE	NTIFICATIO	N OF THE INT	ERVIEWEE			
1. LO	CATION OF THE	TRANSIT POINT										
Q1.	. Border z	one code : _	_			Q4.	. Sex o	of the intervi	ewee :	_		
Q2.	. Transit p	oint code : _	_ _			Q5.	. Natio	onality of the	interviewe	e :		
Q3.	. Geoloca	tion coordinates :				Q6.	. Statı	us of the inte	rviewee :			
	Latitude	;	_			Q7.	. Natu	re of trader:	I			
	Longitud	le :	_	_		Q8.	. Cour	ntry of trader	: _ _			
						Q9.	. Mod	e of transpo	rt : _			
3. PRO	DUCT DESCRIF	TION										
Q	Q11.	Q12.	Q13	Q14.	Q15.	Q	Q17.	Q18.	Q1	Q20.	Q21.	Q22
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Н	Product	Product	Unit	Quantity	Value	С	Gross	Net	Nat	Country of	Source	
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6.2. Annex 2: Model Memorandum of Understanding of the ICBT Survey

CONSIDERING:

- The necessity of performing the Censuses and Surveys of Informal cross border Trade;
- That an Inter-Institutional Agreement would permit a joint performance of updated surveys to quantify Informal cross border Trade in a given period,
- The necessity to provide valuable information for economic policy decision-making, investment promotion and facilitation, as well as for the Balance of Payments and the National Accounts statistics;

NOW THEREFORE, the parties hereby agree to implement this Inter-Institutional MoU under the following terms and conditions and to perform it according to such terms and conditions:

Article 1: Object of this MoU

The objectives of this MoU are the following:

- To promote, improve and develop inter-institutional activities associated to obtaining data regarding informal cross border trade flows between and its neighbouring countries, by performing a monthly data collection known as the "Informal Cross Border Trade Survey, hereinafter "ICBTS" in short;
- To quantify volume and value of goods crossing from and to (Name of the Country);
- To provide, by performing these surveys, information that can be used in regional and national economic analysis, investment promotion and facilitation, and subsequent decision-making;
- To carry regular qualitative surveys to assess impact of ICBT policies on border stakeholders.

Article 2: Tasks to be Performed

The tasks to be performed are hereby described:

- To collect information that provides the main parameters of informal trade flows between (Name of the Country) and its neighbouring countries;
- To provide information broken down by goods volume and value, destination and origin of the goods, as well as information regarding the goods holder and mode of transport;
- To publish official information regarding informal cross border trade flows between and its neighbouring countries;
- To collect qualitative information for impact assessment of ICBT policies on border stakeholders.

Article 3: Budget and Refinancing

The starting point of the reference period for the task is Month/Year for which there is an annual budget approved by all partner institutions chief budget managers and to which all the signing parties shall equally contribute to. The budget shall be prepared annually by the technical team, reviewed by the coordination committee and approved by partner's institutions budget managers.

Article 4: Resource Management

Article 5: Establishment of Technical and Coordination Committees

To facilitate the achievement of the tasks and obligations provided for under this MoU, the Participating institutions agree to establish two inter-institutional committees: the Inter-Institutional Coordination and the Inter-institutional Technical Committees. Each inter-institutional committee shall be composed by members from partner institutions. Each institution shall appoint one (1) representative for the Inter-institutional Coordination Coordination and two (2) representatives for Inter-institutional Technical Committee.

Article 6: Duties and responsibilities of the Inter-Institutional Coordination Committee

- The inter-institutional coordination committee shall be composed of DGs or directors from partner institutions. The duties and the responsibilities of the Inter-Institutional Coordination Committee shall be:
- To nominate the inter-institutional technical team members.
- To oversee, review and approve the work performed by the technical team.
- To coordinate national and international events involving cross border trade and related issues.

• To promote events that examine and publicize the method and scope of the work performed within the framework of this MoU.

Article7: Duties and Responsibilities of the Inter-Institutional Technical Committee

The inter-institutional technical committee shall be composed of personnel with knowledge and experience in the field of cross-border trade, methodology design for survey, data management and reporting. The duties and the responsibilities of the Inter-Institutional Technical Committee shall be:

- To supervise monthly ICBTS.
- To ensure the consistency of the data obtained in the surveys.
- To evaluate and analyze the final survey results.
- To submit the results of each survey to each of the member institutions of this MoU.
- To supervise data acquisition tasks.
- To assess part-time personnel involved in ICBTS.

Article 8: Obligations of the Statistics Office

The Statistics Office is responsible of the following:

- To lead and monitor all the activities involved in the development and fulfilment of this MoU.
- To lead the methodology design and reporting activity.
- To re-design, if need be, the forms used to obtain information
- To take part, if need be, in training part-time personnel to be hired to perform the field work.
- To organize, coordinate and supervise data entry.
- To chair the technical committee that will quantify ICBT.
- To process the basic data obtained, release the results, and provide a copy of the survey database to the co-financing entities.
- To contribute to the survey budget that has been established and approved.
- To submit in due time to all the Participating institutions that are party to this MoU, a report on all the expenditures of the resources devoted to financing the survey.
- To produce and submit a monthly report on cross-border trade data not later than one month after data collection.
- To contribute to the preparation and dissemination of ICBT information.
- To ensure technical and financial sustainability in conducting this work beyond the life of the ICBTS.
- To include survey data in annual statistical yearbook.

Article 9: Obligations of the Central Bank

Central Bank is responsible of the following:

- To take part in the design of new forms used to acquire information.
- To re-design, if need be, the forms used to obtain information.
- To take part, if need be, in training part-time personnel to be hired to perform the field work.
- To participate in organizing, coordinating, and supervising data entry.
- To ensure the survey is conducted according to the technical standards;
- To contribute to the survey budget that has been established and approved.
- To participate in processing, the basic data obtained.
- To include data on informal cross border trade in balance of payments statistics of (Country name);
- To contribute to the preparation and dissemination of ICBT information.
- To work in a coordinated fashion with the Inter-Institutional Technical Committee to process the basic information obtained and to disclose the results.
- To ensure technical and financial sustainability in conducting this work beyond the life of the ICBTS.

Article 10: Obligations of the Ministry of Trade and Industry

The Ministry of Trade and Industry I is responsible of the following:

- To take part in the design of new forms used to acquire information.
- To re-design, if need be, the forms used to obtain information.
- To take part, if need be, in training part-time personnel to be hired to perform the field work.
- To organize, coordinate and supervise data entry.

- To contribute to the survey budget that has been established and approved.
- To participate in processing, the basic data obtained.
- To contribute to the preparation and dissemination of ICBT information.
- To work in a coordinated fashion with the Inter-Institutional Technical Committee to process the basic information obtained and to disclose the results.
- To ensure technical and financial sustainability in conducting this work beyond the life of the ICBTS.

Article 11: Obligations of the customs office

The customs office is responsible of the following:

- To take part in the design of new forms used to acquire information.
- To re-design, if need be, the forms used to obtain information.
- To take part, if need be, in training part-time personnel to be hired to perform the field work;
- To organize, coordinate and supervise data entry;
- To contribute to the survey budget that has been established and approved;
- To contribute to the preparation and dissemination of ICBT information;
- To participate in processing the basic data obtained;
- To work in a coordinated fashion with the Inter-Institutional Technical Committee to process the basic information obtained and to disclose the results;
- To ensure technical and financial sustainability in conducting this work beyond the life of the ICBTS.

Article 12: Modifications

Modification of the terms and conditions of this MoU may only be made by written agreement between the partner institutions. Said modifications shall come into force as soon as the pertinent document (addendum, modification, annex or otherwise) is signed.

Article 13: Duration

This Agreement is made for three (3) years and is renewable. Any party Institution may, at any time, withdraw from the collaboration at the express and justified request of any of the partner institutions, in which case the said request must be notified to the remaining parties at least three (3) months in advance.

Article 14: Follow up of ICBT data Collection

This MoU is valid for ICBT data updating works. The signing parties convene to play their respective role and contribute equally to the required budget prepared by the Inter-Institutional technical team and approved by the coordination committee of which their representatives are members in accordance with article 5 of this MoU.

Article 15: Commencement

This MoU shall come into force on the date of its signature. It takes effect from DD/MM/YY.

6.3. Annex 3: ICBT survey indicative budget			
Project Components	Unit Amount	Units	Total
1. Capacity Building of Enumerators			
Transport for enumerators (x potential enumerators)			
Accommodation for enumerators (x potential enumerators)			
Incidentals for enumerators (x potential enumerators)			
DSA for trainers (x trainers)			
Hiring of workshop venue (hall + stationeries + projector + sound system)			
Conference package (2 Tea Breaks, water, and lunch) for trainees and trainers			
Transport to and from the workshop venue			
Other workshop related expenses			
2. Data Collection, Management, Report writing and Dissemination			
Salaries of Enumerators			
Airtime for enumerators			
Equipment for enumerators (jackets, T-shirts, stationeries, raincoats, umbrellas, etc.)			
Transport for supervision			
DSA for supervision			
Printing of questionnaires*			
Design of the data entry template			
Salaries for data entry clerks			
Airtime for data entry clerks			
Other data collection related costs			
Workshop for data analysis and report writing (Transport, DSA, conference hall, conference package, etc.)			
Dissemination workshop + printing of the report			
Other costs			
3. Project Management Costs			
Programme officer			
IT Support staff			
Finance and Administration Assistant			
5 Laptops (one to be used as a server and others to be used by survey analysts)			
30 Desktops (to be used in data entry)			
250 Tablets for data collection			
Other office equipment			
Other project management costs (a missions for the consultants, etc.)			
Other administrative related expenses (social security, medical insurance, etc.)			
Bank Charges			
TOTAL			