

East Africa Grain Council (EAGC)



**A Data Collection Methodology for Informal Cross-Border Trade in the East African
Community**

Revised Draft Manual

Submitted by

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Executive Summary

Market Information Systems (MIS) especially those with an interest in Informal Cross Border Trade (ICBT) have expanded across the East African region in recent times. The considerable interest in ICBT has mainly been driven by the realization that ICBT forms a substantial share of intra-EAC trade. However, knowledge of the magnitude of ICBT in the EAC, remains inadequate, leading not only to undervaluation of cross border trade figures in the national accounts, but also inhibiting formulation of appropriate policies and strategies to exploit its potential impact, particularly on food security. In order to facilitate better collaboration and data sharing among MIS providers in the region, it is necessary to develop a harmonized methodology for ICBT data collection that leverages and builds on the methodology developed to cover cross-border trade.

The purpose of this paper is to provide practical methodological and analytical guidelines for field staff and researchers engaged in collection, compilation, transmission and dissemination of ICBT data in the EAC region. The ultimate goal is to develop a standardized manual for monitoring of ICBT with respect to capturing accurate trade volume, prices, direction of flow and fit circumstances in the EAC, rather than simply applying broad across the board techniques. The paper uses the field instruction manual for ICBT surveys developed by UBOS and the ICBT field monitors manual developed by the MAS group as the basis of developing a harmonized methodology for collecting ICBT data in the EAC region.

In practice, three techniques for collecting primary ICBT data are applied either alone or as a combination depending on the circumstances: border observation; tracking movement of large transport vehicles; and stock taking at open markets. Among the three techniques, border observation is the least disruptive method of monitoring ICBT. It involves the direct observation and recording of informal cross-border trade. Under this approach, the monitor works during the day (7 am to 6 pm), observing and recording the amount of commodities and livestock crossing in and out through a designated border point. The monitor also works with selected border traders who act as key informants for any qualitative information and clarifications needed with regard to the cross-border flows. Towards this end, training is mandatory to acquaint the monitors with the measurement units and conversion factors relevant to their markets.

A cost effective approach to border monitoring is conducted by applying census techniques to cover major agricultural and industrial commodities during two weeks randomly selected from each month over a period of 12 months. Estimated average monthly trade volumes derived from observed figures are used to estimate the annual volume and value of unrecorded trade flows between two trading partners. Border monitoring proceeds in eight stages and includes; border site selection, profiling of selected border points, development of a monitoring schedule, selection and training of enumerators, data collection and data transmission and validation, database hosting and maintenance and data analysis and dissemination.

1. Introduction

This manual describes a methodology for collecting Informal Cross Border Trade (ICBT) data within the East African Community (EAC). It begins by reviewing the techniques used for collecting informal cross border trade data and discusses the activities undertaken in collecting informal trade data in the recommended technique. It also specifies the profile and scope of work for a cross-border trade monitors, describes the data collection procedures as well as data collection instruments. The manual is intended for use by cross-border monitors and also act as a reference tool in setting up programs to monitor cross-border trade in the region.

1.1. Analytical Techniques for Quantifying Cross Border Trade

Three techniques for collecting primary ICBT data are applied either alone or as a combination depending on the circumstances: *border observation; tracking movement of large transport vehicles; and stock taking at open markets* (Egg *et al*, (1988); Ackello-Ogutu (1996)). The proceeding sections briefly describe each of these three techniques before recommending one approach for use in ICBT monitoring within the EAC region

1.1.1. Border Observation Technique

Among the three techniques, border observation is the least disruptive method of monitoring ICBT. It involves the direct observation and recording of informal cross-border trade. Under this technique, enumerators are positioned strategically at border posts to record all merchandise entering or leaving the country by observation. All traded goods that are not recorded or officially cleared by the customs authorities should be recorded at a point of crossing in this method. The monitor works during the day (7 am to 6 pm), observing and recording the amount of commodities and livestock crossing in and out through a designated border point. The monitor also works with selected border traders who act as key informants for any qualitative information and clarifications needed with regard to the cross-border flows. The market informers also serve as a key source of price data.

Prior to fieldwork, survey coordinators undertake a selection of border points to be monitored. The selected markets are then profiled before a monitoring schedule is developed. This is followed by a recruitment and selection of enumerators to be used in the monitoring exercise. The survey team comprising of enumerators, supervisors and coordinators also undergoes training on the survey instruments. Once the enumerators have been trained, they are deployed to the field to collect data under close supervision and in accordance with the monitoring schedule. The monitors collect information on the magnitude and direction of trade flows, market prices, at the border points for the specified commodities using the monitoring tools provided. At the end of each day, the

data collected is summarized and transmitted to a central database. At the central database, the information collected is validated, analyzed, stored and disseminated to the public.

1.1.2. Tracking Technique

Direct border observation alone may not yield a realistic picture of the unrecorded trade if transporters collude with customs officials to fraudulently avoid payment of duty through misdeclaration and misspecification of cargo. The *tracking technique* is aimed at estimating the volume of unrecorded trade that passes across the border through manipulation of the documentation procedures. It involves interviewing the drivers to find out information such as commodity carried, source and destination and other information that cannot be gathered by observation. Admittedly, this requires a cleverly planned operation by fairly experienced persons, preferably former customs or police officers, but it is felt that the strategy would reveal vital information regarding underinvoicing, misspecification of goods and other malpractices aimed at avoiding payment of duty. Tracking is conducted only on a sample of 10 percent of the trucks passing through selected borders, and basically entails tracing cargo movement from the port of entry to the declared destination, eventually comparing the findings with those in the official customs records. The information acquired through tracking basically augments data obtained from border observation.

1.1.3. Stock Taking Technique

The *stock taking technique* is particularly suitable for open border markets along frontier borders. This approach works only in those borders with open markets where all commodities moving in and out of the country are assembled or stored at these markets. The objective of this approach is to estimate the quantity of goods sold and bought by traders/buyers from either country, taking into account stock carryover and replenishment. The technique requires quantification of net import and export figures by taking into account volume of goods brought to the market by traders in both countries, volumes purchased, and carryover stocks—the latter being treated as beginning stocks for the next market day. A sample (or where possible, a census) of traders is taken and an estimate made at the end of the trading day of the goods traded and the carryover stocks. Weekly and monthly import/export figures are then derived from the daily estimates of the net stock changes. This approach, however, is combined with the border observation on nonmarket days when the level of trade activity declines and interviewing to find out other detailed information.

1.1.4. Choice of a Technique

The border observation technique of data collection is deemed to be the most cost-effective way of gathering ICBT data under border conditions, which are far from ideal such as those existing within the EAC region. The direct observation technique for data collection takes into account the characteristics and prevailing habits of informal/unrecorded trade practitioners at the borders. This technique is deemed

appropriate for the circumstances in the EAC region as experimented earlier in the survey's carried out by Ackello-Ogutu, (1996), UBO, (2003, 2004, 2008 and 2010) and MAS (2010). This study therefore recommends the border observation technique as the most appropriate method for monitoring ICBT within the EAC.

2. Direct Border Observation of ICBT

The border observation technique requires the selection of popular and accessible border sites for posting of enumerators. Both official and unofficial cross border trade is concentrated in and around established towns and customs points along the borders. The unofficial routes are usually around these stations rather than in the remote frontier region. A cost effective approach to border monitoring is conducted by applying census techniques to cover major agricultural and industrial commodities during two weeks randomly selected from each month over a period of 12 months. Estimated average monthly trade volumes derived from observed figures are used to estimate the annual volume and value of unrecorded trade flows between two trading partners. Border monitoring proceeds in eight stages and includes;

- border site selection,
- profiling of selected border points,
- development of a monitoring schedule,
- selection and training of enumerators,
- data collection and
- data transmission and validation
- Database hosting and maintenance
- Data analysis and dissemination

2.1.1. Border Site Selection

It is usually not possible to monitor all border points due to logistical, financial and other limitations. Site selection is undertaken on the basis of practical considerations such as volume of trade, communication infrastructure, transport links, availability of supporting institutions and availability of recruitable personnel for the monitoring duties. The border monitoring should be concentrated around the known crossing points. A census technique should be used to provide a listing of all such points, as well as the major commodities traded (agricultural products, agricultural raw materials and industrial goods. Once, such a listing is done, the choice of the markets is undertaken based on the practical considerations. The recommended sampling procedure can be characterized as a two-stage process initially involving selection of judgmental clusters consisting of relevant trade practitioners at the specified border points.

In the case of the EAC, seven major borders should be covered. These include;

- a. The Kenya-Uganda border

The major markets along this border point include Busia, Malaba, Lwakhakha.

- b. The Kenya-Tanzania border

Markets here include Isebania, Namanga, Taveta, Oloitoktok and Lunga Lunga.

- c. The Uganda-Rwanda border

The major markets on this border include Mirama, Katuna and Cyanika border stations

d. The Uganda-Tanzania border

The major markets along this border include Mutukula and Kikagati border stations

e. The Rwanda-Burundi border

The major market on this border point is Gatuna and Kayanza Haut

f. The Rwanda-Tanzania border

The main markets along this border are Rusomo,

g. The Burundi-Tanzania border

Markets include Gisiru, Kobero, Chaguga, Mabamba, Nyanza Lac and Zombe.

Using the judgmental cluster sampling technique, border points to be monitored across the EAC should be selected. Similarly, a detailed listing of the commodities to monitor across the three broad product categories (agricultural products, agricultural inputs and industrial goods) should be developed. The most commonly traded agricultural products across the EAC include; maize, beans, beef, fish, cashew nuts, wheat, tobacco, rice, sugar, potatoes, fruits and vegetable, seeds, fertilizers and machines. On the other hand the common industrial consumer goods include oils and fats, toiletries, bicycles, shoes, petroleum products, textiles, wines and spirits and spare parts. To avoid duplication, the MIS agencies undertaking ICBT monitoring within the region should share out the border points to cover and develop a common coding system.

2.1.2. Profiling of Selected Border Points

Once the border sites have been selected the border points to be surveyed are profiled. Cross-border market profiling is the second activity in setting up a monitoring system. Effective monitoring of cross-border markets requires understanding not only of the functioning of the markets (structure, conduct and performance) but also having knowledge on the infrastructures available within the markets. In the context of this manual, market profiling should avail information on:

- i. Location of the market – description of the market, its catchment area, nearest border markets, number of crossing points and importance of each crossing point
- ii. Days and hours of operation; peak market operation level
- iii. Commodities traded across the border and traders involved
- iv. Type of trade for every commodity (formal or informal)
- v. Market infrastructure supporting trade of every commodity
- vi. Transactional arrangements between the traders (for all the commodities traded)
- vii. Trade flow, marketing costs and trader margins (for every commodity)
- viii. Seasonal variation in commodity supply and prices
- ix. Importance of the market to food security
- x. Shocks to the market

Market profile information is useful in building contextual information necessary for interpreting and analyzing ICBT data in the absence of historical data on trade volumes (for informal trade). The information is also useful in selecting the position and/or

number of monitoring points and in choosing the monitoring method (or combination of methods) to apply in the market. It is important to mention that key informant interviews should be part and parcel of any monitoring method selected.

2.1.3. Development of a ICBT Monitoring Schedule

After the profiling of the selected border points, the next stage requires the development of a monitoring schedule. The monitoring schedule should be followed strictly to achieve reliable results. Ideally, all days in the month should be monitored. However owing to resource constraints, it is recommended that monitoring be undertaken daily for two weeks randomly selected from each of the twelve months. The remaining weeks should be estimated using suitable extrapolation methods. Extrapolation is the process of constructing new data points (Sidi, 2003). Extrapolation applies human experience to project, extend, or expand known experience into an area not known or previously experienced so as to arrive at a (usually conjectural) knowledge of the unknown (e.g. a driver extrapolates road conditions beyond his sight while driving). A sound choice of which extrapolation method to apply relies on *a priori knowledge* of the process that created the existing data points. The simplest form of extrapolation is a linear extrapolation, which means creating a tangent line at the end of the known data and extending it beyond that limit.

The two weeks to be monitored should be randomly selected from among all the weeks in a month. For illustration purposes, if monitoring commences in the second week of August in any particular year, the following monitoring schedule would apply (Table 1). The figures in the third column of Table 1 indicate the weeks of the month when monitoring actually takes place; for instance, 8.2 and 8.4 mean that the second and fourth quarters (weeks) of August are monitored. The weeks of the month to be monitored should be randomly selected with the restriction that each quarter of the month is sampled (observed) six times over the 12 months thus providing adequate data for reconstructing realistic estimates of the monthly trade volume. The 12 month period is deemed long enough to capture trade seasonality within the year. Randomization reduces enumerator fatigue and avoids chances of data cooking.

Table 1. Time Chart for Monitoring ICBT

Year	Month	Monitoring Weeks of the Month
Year 1	August (8)	8.2 and 8.4
	September (9)	9.1 and 9.3
	October (10)	10.2 and 10.3
	November (11)	11.1 and 11.4
	December (12)	12.1 and 12.3
Year 2	January (1)	1.2 and 1.4
	February (2)	2.2 and 2.3
	March (3)	3.1 and 3.4
	April (4)	4.2 and 4.4
	May (5)	5.1 and 5.3

June (6)	6.2 and 6.3
July (7)	7.1 and 7.4

Source: Adopted from Ackello-Ogutu, 1996

In Table 1, the monitoring quarters are distributed as follows over the calendar months:

- QTR I Year 1 September; November; December; Year 2 March; May; July
- QTR II Year 1 August; October; Year 2 January; February; April; June
- QTR III Year 1 September; October; December; Year 2 February; May; June
- QTR IV Year 1 August; November; Year 2 January; March; April; July

For simplicity, a four-week month is assumed. Where there are complications as in February, or where a month begins midweek, forward or backward shifts are made appropriately to ensure that seven days of monitoring are accommodated; preferably by starting on Monday and ending on Sunday. Monitoring is done using a census approach during day time (or whenever business ordinarily takes place to provide for some flexibility) for all the days of the week thus giving a total of 168 days in a year (12 months x 2 weeks x 7 days).

The random selection of the quarters is meant to avoid the potential influence enumerators may have on the trading activities and routines of those being monitored as would most likely occur if observation is concentrated at the same sites over a long stretch of time. Posting of enumerators at one point over a long period of time may also expose them unduly to life threatening encounters with smugglers who may feel that their operational hours are being curtailed. The sampling procedure adopted here is not unique, nor is it based on rigorous theory of probability. However, attempts should be made at all the geographic sites under investigation, to cover no less than 75 percent of the unrecorded trade taking into account both site and commodity selection. The uncovered proportion is accounted for by trade on contraband and goods that are not easily observable such as electronics, cigarettes, alcohol (other than beer) precious metals and other valuable natural resources. Similarly, any trade that takes place at life-threatening hours and places should not be covered.

2.1.4. Selection and Training of Enumerators

Once a monitoring schedule is developed, the next stage in border observation is the recruitment and training of enumerators. Before selecting and training of enumerators, one should be clear on: the number and location of monitoring points in the cross-border market, the commodities to monitor, the days and hours of monitoring, the method of monitoring, the data collection tools to use, and the means of data transmission. The enumerators are supposed to be persons of high integrity, honest and should be conversant with the languages spoken and topology of the border post.

The enumerators have to undergo training to equip them with adequate skills on data collection, data recording and data transmission. Training is mandatory to acquaint the enumerators with the measurement units and conversion factors relevant to their

markets. This process has to be done in a consultative manner with the relevant stakeholders. The government through the relevant ministry should be contacted as well as any development projects and programs working along these borders.

Formal interviews should be conducted to identify suitable candidate. An orientation should be organised for the successful persons, which includes training on the whole process of data collection, data recording and transmission to enhance accuracy and reliability. The monitor works with selected border traders who act as key informants for any qualitative information and clarifications needed with regard to the cross-border flows. The monitor will be required to build trust and goodwill and assurance that the monitoring activities would not interrupt traders' activities in any way. The border monitor should develop good interpersonal skills to be able to work amicably with all the actors in cross-border trade. The monitor shall build networks with the local traders association, where they exist, as this is an important source of information about informal cross-border trade.

The monitor should avoid being involved in local politics or any other activities that would interfere with the work of border authorities or traders. The monitor should adhere to the accepted norms of interviewing, when introducing themselves to key informants and when verifying information with other traders. The monitor should stress issues of confidentiality and explain the purpose of the information collected. The monitor should clarify that there are no direct personal benefits attached to participating as key informants. She/he should avoid controversial matters, remain neutral and ask one question at a time. The monitor should always be in control but also allow traders/informants to provide additional detail if necessary.

Enumerators should also work hand in hand with Immigration and Customs Officers at those border posts. The monitor conducts his/her duties without disrupting trade activities and ought to be very courteous when making enquiries with the traders. Unless the commodity is packed in an obscure manner the monitor should rely on direct observation method to establish the weight/volume and type of commodities. Each enumerator should be provided with an introduction letter to be submitted to the authorities at border station. Enumerators are required to introduce themselves to these officials before commencing work. In addition, enumerators are supposed to cooperate and seek guidance where possible for the success of the survey. The remainder of this section details the roles of the monitors in observation ICBT.

- ***Responsibilities of the monitor***

The cross-border monitor is responsible for the collection of all data pertaining to the border market. This data includes:

- i. Volume of the commodity moving in and out of the country (using standard units of measurements)
- ii. Source and destination of the commodity
- iii. How the commodity is transported across the border.

- iv. The nominal price of that commodity at the border.
- v. The exchange rates at the border.

The monitor will on a daily basis observe and record all quantities of commodities passing through the respective monitoring point through informal means. To do this the monitor shall be expected to build a good rapport and trust with the traders and local border authorities, which is essential for the smooth running of the monitoring activity. All captured data will be recorded, compiled and transmitted to the cross border monitoring agency.

- ***Responsibilities of the supervisor***

A supervisor is appointed, he/she will on regular basis travel to the field to check on the monitors work including the filled data collection tools. The supervisor will go through the filled tools to counter check data usually sent to the monitoring agency. She/he will also visit each of the routes used for moving commodities in and out of the country. In addition the supervisor will also interview the other the key players at the border, among them the customs officers and private traders in order to get other relevant information. Interviewing key players at the border enables the supervisor to understand and verify certain information especially commodity source and seasonality.

- ***Engaging cross-border monitors***

The following should be prepared when engaging the monitors:

- i. Project description and importance of border monitoring
- ii. General approach and data collection tools
- iii. Responsibilities and duties of the monitor
- iv. Visit to the sites to assess the main data collection points
- v. Introductions to the border authorities and the main traders
- vi. Bio-data for the enumerator, including curriculum vitae, telephone contacts, email addresses, passport size photos, bank account information
- vii. Briefing on the contract
- viii. Provision of data collection tools and launch of the monitoring activity.

2.1.5. Data Collection

Before presenting the tools proposed for use in data collection, this section presents some key guidelines (protocol) to be applied in ICBT data collection as well the measurement of prices and cross-border flows.

- ***Measurement***

The monitor shall collect information on the magnitude and direction of trade flows, prices, both at source and destination using the monitoring tools provided (see elsewhere in this manual). The monitor shall record each flow in a counter book and at the end of each day; provide a tally of the different commodities observed for that day

in a daily trade flow summary sheet. The measurement should be provided in standard units (SU), which requires that the monitor be quite familiar with the local units of measurements and conversion factors to standardize all the quantities observed

- ***Estimation of prices***

Three methods are recommended in collecting price data. These include noting the price if prices are marked, asking the seller the price of the commodity as if the monitor were a buyer and by observing a transaction between an actual buyer and seller. Regardless of methods used in price collection, at least five wholesale price quotations are required for each commodity which, are collected from 3 pre-selected established traders and 2 randomly selected traders. However, since trade varies from one border to the other, this is used only as a guideline. The selected traders become the key informants on qualitative information about market prices, flows and trader behaviour. Prices should be reported in standard units of measurement and for the most commonly occurring quality grades, mostly the fair average quality. Since at least five prices are necessary for each commodity, the highest and lowest price observations could represent the high and low quality grades. Price data collection should be carried out about the same time every day, corresponding to the time when the number of buyers and sellers are at their peak (as revealed by market profiling). An appropriate timing is the midmorning, when market activity is usually at its peak. This permits comparisons of day to day price data and also ensures that there is a common understanding of how and when market prices are collected, which allows also for inter-market comparability.

Where necessary the monitor can prepare a timetable indicating the time when different types of market information should be collected. In the case of livestock commodities, it is good to report the price of animals with medium body condition as it is not possible to weigh the animals. Additionally, visual inspections will enable the monitor to capture obvious variables such as type of livestock (cattle, goats, camels, etc.); breed (zebu, boran, dooper, etc.); sex (male or female), age (young, immature and matures) and body condition (well finished, medium, thin and emaciated). These attributes are crucial for effective analysis of livestock prices.

- ***Estimation of units of measurement***

The monitor will be required to thoroughly familiarize themselves with the units of weight used in the market. These will include the packaging for different commodities and maximum payloads on bicycles, motorcycles and pick-ups as well as head loads. The monitor with the help of the supervisor will prepare an inventory of all weight units used in their particular markets of operation. Thereafter, the monitor shall use good judgement to estimate the weight of different units of measurement.

- **Data Collection Instruments**

Three tools are recommended for ICBT data monitoring and recording. These include: the daily trade flow monitoring sheet; the price monitoring sheet; and, the

2.1.7. Database Hosting and maintenance

Each of the MIS agencies should have a central server that is linked to a regional server. These MIS agency servers should be maintained by the IT personnel of that agency. In case supplementary maintenance is required, support could be provided by the regional bureau. The regional bureau shall also have a server to which data from the MIS agency servers shall be replicated. This server shall be maintained by an IT unit of the regional bureau.

2.1.8. Data Analysis and Dissemination

The data received shall be cleaned and verified by staff at the regional bureau with assistance from the MIS agency offices. Compilations such as type and quantities of commodities traded per given period shall be made and availed online. The general public shall be able to access this information through a regional website. Users shall be able to specify their information requirements using a 'query' process and shall obtain an immediate response from the server. Furthermore, data shall be used to prepare periodic reports depicting broader occurrences in the markets. These reports shall be availed to users through appropriate media.

3.0. Conclusion

This manual presents the direct observation method of data collection for informal cross border trade as an appropriate technique for monitoring ICBT within the EAC. The foregoing analysis of the literature seems to deem the observational technique as a cost-effective way of gathering data under border region conditions which are generally far from ideal, its minor shortcomings notwithstanding. The procedure proceeds through a series of stages that include;

- border site selection,
- profiling of selected border points,
- development of a monitoring schedule,
- selection and training of enumerators,
- data collection and
- data transmission and validation
- Database hosting and maintenance
- Data analysis and dissemination

The direct observation technique yields reliable estimates of ICBT flows with minimal supervision at a considerable cost.

1. WFP's Proposed Regional Data Transmission System

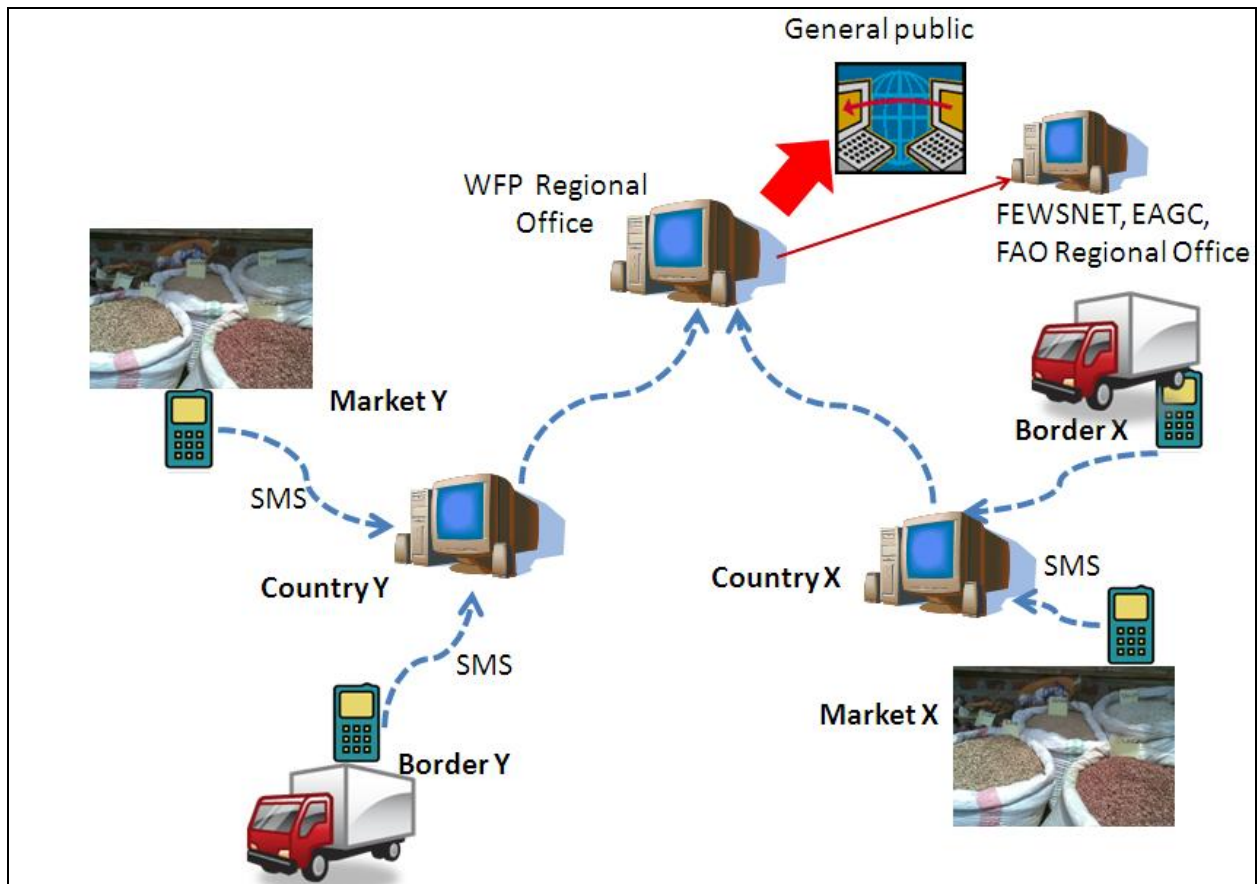


Figure 1: Proposed data transmission system

Figure 1 depicts the proposed data transmission system. The system involves sending a coded SMS to the country server which has an application (Frontline) that enables interaction between the senders' phones and the server itself. This application automatically detects errors and on this basis accepts or rejects the SMS with immediate notification to the sender. The application allows for the country server to replicate the accepted data to another server (located at the regional bureau) where it can be accessed for further quality assurance and analysis. In order to safely and securely avail this data to the general public, another server is to be installed and the data replicated to it via a security barrier to avoid unauthorised intrusion (Figure 2).

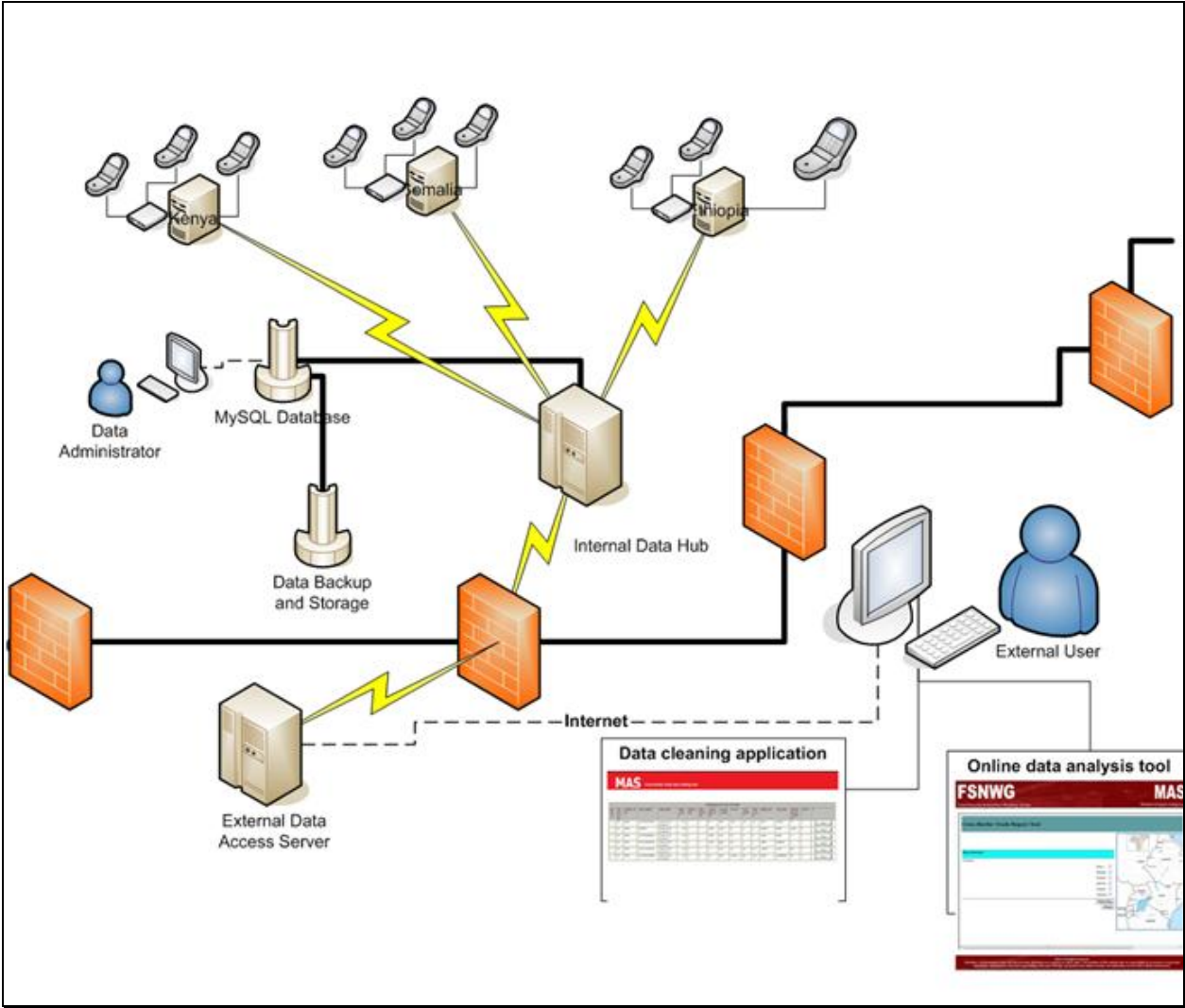


Figure 2: Proposed data internal control system