SUSTAINABLE DRUG SELLER INITIATIVES PROGRAM

UGANDA

SUPPLY CHAIN MANAGEMENT SYSTEMS FOR ACCREDITED DRUG SHOPS

A consolidated report based on research, situational and options analyses, and stakeholder input

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Prepared by Pharmaceutical Systems Africa for Sustainable Drug Seller Initiatives

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ACKNOWLEDGMENTS

PREFACE

The Sustainable Drug Seller Initiatives (SDSI) program continues Management Sciences for Health's efforts in Africa to involve private drug sellers in enhancing access to essential medicines. It builds on two previous MSH programs, which focused on creating and implementing public-private partnerships using government accreditation to increase access to quality pharmaceutical products and services in underserved areas of Tanzania and Uganda. SDSI's goals include ensuring the maintenance and sustainability of these public-private initiatives in Tanzania and Uganda, and introducing the initiative in Liberia.

In Uganda, SDSI objectives are to enhance the accredited drug shops' long-term sustainability, contributions to community-based access to medicines and care, and ability to adapt to changing health needs and health system context. In order to achieve these objectives, SDSI commissioned local organizations ("contractors") to assess various components of the Accredited Drug Shop (ADS) initiative and develop recommendations for improvements.

Annex 1 provides further information about each component and identifies the contractor and their objectives. Nine factors affecting ADSs in Uganda were examined:

1) ADS Regulatory System
2) Supportive Supervision
3) ADS Seller Training
4) Mobile Technology
5) Geographic Information Systems
6) ADS Associations
7) ADS Supply Chain
8) Engaging ADS Consumers
9) Community-Based Health Initiatives

In completing their assignments, each contractor undertook three primary activities:

- Preparing a situation analysis based on qualitative and quantitative data on their topic gathered through extensive interviews and use of questionnaires;
- Analyzing the options for future action;
- Present the data, analyses, and options to stakeholders in a workshop, followed by a plenary meeting, so they could review and comment on the analyses and conclusions and make recommendations.

The contractors submitted their findings in three reports, one on each of the above. The reports were then compiled into single reports, like this one on supply chain management for ADS.

ACRONYMS AND ABBREVIATIONS

ADDO   accredited drug dispensing outlet

ADS   Accredited Drug Shop

CBC   Century Bottling Company

DADI   District Assistant Drug Inspector

DHO   District Health Office[r]

EADSI   East African Drug Seller Initiative

ERP   enterprise resource planning

FMCG   fast moving consumer goods

GoU   Government of Uganda

HIHE   high impact, high effort

LMIS   logistics management information system

MoH   Ministry of Health

MOU   memorandum of understanding

MSH   Management Sciences for Health

NDA   National Drug Authority

SCMS   supply chain management system

SDSI   Sustainable Drug Seller Initiatives

UGX   Uganda shilling

VMI   vendor managed inventory

1. EXECUTIVE SUMMARY

INTRODUCTION AND BACKGROUND

Uganda's population by mid-2009 was estimated to be 30.7 million, and it has one of the highest growth rates in the world. Poverty and poor access to health services, particularly in rural areas, leave most of the population with one of the highest mortality and morbidity rates in the world, mostly from diseases that are curable and preventable. Most of the public health facilities are in urban areas, so rural areas must rely mostly on the private sector. This has compelled the Government of Uganda (GoU) to strengthen public-private partnerships in order to build capacity of the private sector in health care delivery.

It is against this background that the Bill & Melinda Gates Foundation provided Management Sciences for Health (MSH) with a three-year grant to continue its efforts in Africa to involve private drug sellers in enhancing access to essential medicines. The new program, the Sustainable Drug Seller Initiatives (SDSI), builds on MSH's Strategies for Enhancing Access to Medicines (SEAM) and East African Drug Seller Initiative (EADSI) programs. SEAM and EADSI focused on creating and implementing public-private partnerships, and the SDSI's goal is to ensure the maintenance and sustainability of these previous programs. It is expected that through these initiatives, access to medicines will be increased and quality of pharmaceutical products and services provided by private sector drug sellers through accredited drug shops (ADS) will be improved in a sustainable manner.

As one of the ways to do this, SDSI endeavored to identify and manage bottlenecks in the supply chain management systems in Uganda. It instituted a study whose objective was to assess the supply chain, identify challenges and bottlenecks, and propose interventions to address them. This report summarizes Pharmaceutical Systems Africa's methodology, findings, situational and options analyses, and the final recommendations based on their work.

METHODOLOGY

Pharmaceutical Systems Africa (PSA) adopted a descriptive cross-sectional design that used both qualitative and quantitative data collection techniques. The qualitative assessment used questionnaires, observations, and interviews to look at the current supply chain system: forecasting and quantification, selection, ordering, purchasing, transport, dispensing, and record keeping. The quantitative assessment of the ADS looked at the challenges being experienced, opinions on how to mitigate the challenges, and supply chain options.

The survey was conducted in five districts: Kamuli, Kamwenge, Kibaale, Kyenjojo, and Mityana, the districts in which SDSI is rolling out the ADS intervention in collaboration with the STRIDES for Family Health project. Eighty-five drug shops and eight pharmacies were randomly selected for the survey. The drug shop and pharmacy surveys were supplemented by interviews with 20 purposively selected key informants. They were selected based on their knowledge of the operation of drug shops in Uganda. There were two key informants selected from the National Drug Authority (NDA), one from the Ministry of Health (MOH), two from medicines distributors (Abacus Pharmaceuticals and Medipharm), two from

fast-moving consumer goods (FMCG) distributors, (Unilever and Coca-Cola), the five District Assistant Drug Inspectors (DADIs), the five District Health Officers (DHOs), and three officials from the drug sellers associations, where they exist.

PHARMACY RESULTS

PSA surveyed mostly rural districts, with an average of three pharmacies each providing both wholesale and retail services. Human resources in these pharmacies were reasonable in number and qualifications. The pharmacies had an average of four staff, who were mostly nurses, but there were also pharmacy technicians and degree holders. All pharmacies quantified their medicine stock requirements using either consumption or morbidity methods. None of the pharmacies imported medicines; all supplies were obtained from distributors and wholesale pharmacies in Kampala. Transport was mostly through public transport, although sometimes their suppliers transported the medicines to the pharmacies. All pharmacies complied with the required standards for space and had adequate storage capacities. Pharmacies developed linkages with drug shops, and drug shops made up more than 50 percent of the pharmacies' sales revenue. Pharmacies experienced several challenges, including poor infrastructure and cost of transport, which resulted in several stock-outs registered during the survey.

DRUG SHOP RESPONDENTS

Respondents from the 85 drug shops were mostly sellers, most of whom indicated their qualification as nursing assistants. Most of them had been at the drug shop for less than one year, indicating that there was high attrition among the drug shop staff. Other than the pharmacies, the sellers performed all the supply chain roles, from selection of medicines to quantification to dispensing. Selection was influenced by the ADS extended list, although pharmacies in many instances persuaded drug shops about what to stock. The ADS bought medicines mostly from local pharmacies, although they also procured medicines from regional- and central-level pharmacies. Orders were mostly placed by physically visiting the pharmacy, and on a few instances they were place by SMS and telephone calls. Because of their small working capital, drug shops bought in small quantities, which led to stock-outs being common. The frequency of ordering varied from once a month to procuring on a daily basis daily, and this was dependent on cash flow. Medicines were transported mostly by public means, although private cars and bicycles were also used. Storage spaces in more than 90 percent of the drug shops were found to be adequate. Drug shops also experienced challenges related to infrastructure, human resources, and inventory management.

OTHER SUPPLY CHAIN SYSTEMS

While the survey focused mostly on the supply chain systems of drug shops, supply chain systems for fast-moving consumer goods and large pharmaceutical distributors were also assessed. These were found to be using several strategies to overcome bottlenecks in the supply chain. The strategies included establishing key distributors, outsourcing deliveries, regular promotional activities, and ensuring good inventory and store management practices.

CONCLUSIONS AND RECOMMENDATIONS

An effective supply chain system needs to have a steady source of supplies, and the supplies need to be delivered in a timely manner and at an appropriate cost. Local pharmacies provide a good option as a source of supply to drug shops, and therefore they need to strengthen their inventory management practices so they can play a focal role in providing support to drug shops in terms of inventory management and pharmaceutical care.

The recommendations are as follows:

- Explore the feasibility of instituting a modified Vendor Managed Inventory program where local pharmacies act as the vendor to monitor inventory of drug shop. (High impact, High effort)
- Build the capacity of pharmacies to play the vendor role. This will require them to, among other things: (High impact, High effort)
    - Mentor drug shops regarding inventory management;
    - Acquire an appropriate inventory management tool;
    - Provide drug shops with inventory management support;
    - Acquire a motorcycle for delivery of medicines;
    - Create and manage linkages with drug shops.
- Provide inventory management tools to ADS and training on their use for proper planning and forecasting. (High impact, High effort)
- The NDA should create awareness of the laws for transportation of medicines. (High impact, High effort)
- In districts without pharmacies, encourage well-managed drug shops to take up the role of wholesale pharmacy.
- Revise ADS extended list to meet new demands and regional differences in disease patterns. (High impact, High effort)
- Engage wholesale pharmacies, drug shop associations, district health offices, and local media in supporting community awareness health campaigns to promote ADS activities. (High impact, High effort)

2. BACKGROUND

The Bill & Melinda Gates Foundation provided Management Sciences for Health with a three-year grant to continue its efforts in Africa to involve private drug sellers in enhancing access to essential medicines. The Sustainable Drug Seller Initiatives (SDSI) program builds on Management Sciences for Health's (MSH's) Strategies for Enhancing Access to Medicines (SEAM) and East African Drug Seller Initiative (EADSI) programs. Those programs focused on creating and implementing public-private partnerships using government accreditation to increase access to quality pharmaceutical products and services in underserved areas of Tanzania and Uganda. The SDSI's goal is to ensure the maintenance and sustainability of these public-private drug seller initiatives in Tanzania and Uganda, and to introduce and roll out the initiative in Liberia. The ongoing work in these three countries is expected not only to expand access to medicines and treatment in additional geographical areas, but also to solidify the global view that initiatives to strengthen the quality of pharmaceutical products and services provided by private sector drug sellers are feasible, effective, and sustainable in multiple settings.

2.1 UGANDA COUNTRY PROFILE

By mid-2009 Uganda's population was estimated to be 30.7 million, of which 15.65 million (51 percent) were female, and 23.8 million (87 percent) lived in rural areas. The population growth rate over the last five years averaged 3.2 percent annually, and over half of the population is less than 14 years of age. With a total GDP of 29.824 trillion Uganda shilling (UGX) (15.29 billion US dollars [USD]) and a per capita GDP of UGX 990,314, Uganda is among the low-income countries in the world.[1]

According to the 2002 census, the infant mortality rate was 83 per 1,000 live births and life expectancy was fewer than 50 years.[2] Rapid population growth, coupled with low GDP, has inhibited the country's ability to raise the standard of living of its citizens, leading to poor health indicators. Communicable diseases are most prevalent, although there is a growing burden of noncommunicable diseases (NCDs), such as mental health disorders, cancer, cardiovascular diseases, and diabetes. Maternal and perinatal conditions contribute to the high mortality rate.[3] Malaria is the leading cause of morbidity in Uganda, accounting for close to half of the country's morbidity.

Both the public and the private health sectors provide health services in Uganda. The distribution of public sector facilities is skewed toward urban areas, leaving rural areas to rely mostly on the private sector for service delivery. This has compelled the government to focus on improving the capacity of the private sector in health care delivery in rural areas.

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[1] Uganda Bureau of Statistics 2009

[2] Uganda Bureau of Statistics 2009

[3] World Health Organization. "Burden of Disease 2006"

2.2   CHALLENGES OF ACCESS TO MEDICINES

Access to quality medicines remains a major challenge for many health care systems around the world. It is estimated that one-third of the world's population, particularly in developing countries, still lacks essential medicines.[4] Access to essential medicines provides a major bottleneck to achieving the Millennium Development Goals for many governments, particularly in sub-Saharan Africa. In a bid to improve the health and quality of life of their populations, governments are continually focusing a lot of attention on the private sector to improve access to essential medicines, particularly in rural areas. Many global initiatives have focused on the private sector to improve access to essential medicines like artemisinin-based combination therapy. Examples of such initiatives include the Affordable Medicine Facility –malaria (AMFm) a Global Fund initiative. Many of these initiatives provide valuable financial resources to procure medicines; however, ineffective and inefficient supply chain systems lead to poor availability.

Like health care service delivery in Uganda, the pharmaceutical sector is skewed to urban areas. All of the 529 pharmacists licensed in the 2010–2011 operation year were located in urban areas, leaving rural areas to be serviced by drug shops or informal medicine sellers.[5] Therefore, improving access to medicines in rural areas demands intervening pharmaceutical services delivery in drug shops located in rural areas.

2.3   OVERVIEW OF THE PHARMACEUTICAL SUPPLY CHAIN

The pharmaceutical supply chain involves delivery of medicines from product development, production, planning and forecasting, to delivery of medicines—all actions leading up to use of the medicines by the consumer. Poor practices in the supply chain can lead to poor quality medicines, wastage, or stock-outs of medicines, which negatively affect the health outcomes of a community. The goals of a successful supply chain are to ensure cost-effectiveness, appropriate quality, on-time delivery, expected quantity, and proper utilization of the medicines, all of which require that those managing the system are competent and conduct themselves in a professional manner. Success of the pharmaceutical supply chain depends on the existence of the necessary infrastructure; a clear regulatory and policy framework; good management capacity; competent human resources, which operate with integrity and professionalism; and good procurement and marketing practices.[6]

However, Uganda is faced with challenges, including lack of reliable infrastructure, lack of integrity and professionalism among health workers, and a lack of trained technical staff. An inadequate regulatory and policy framework hinders the establishment of an effective supply chain system for medicines and results into wastage, stock-outs, high costs, and irrational use of medicines, and it negatively impacts access to essential medicines. Therefore, the ideal supply chain system for Uganda will be flexible and

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[4] WHO. "World Pharmaceutical Situation Report 2004"
[5] Annual Health Sector Performance Report 2010–2011
[6] Uganda Health System Assessment 2011

adaptable to conditions, for example, to bad infrastructure such as bad roads, substandard buildings, lack of electricity, an ever-changing policy framework, and untrained human resources.

2.4   ACCREDITED DRUG SHOPS IN UGANDA

In Uganda, EADSI determined what it would take to successfully adapt Tanzania's accredited drug dispensing outlet (ADDO) model for Uganda, and the concept was introduced successfully in Kibaale District in 2009. Results from the project evaluation showed that district health officials, shop owners, and sellers embraced the Accredited Drug Shop initiative. The objective of SDSI is to enhance the long-term sustainability of ADS; their contributions to community-based access to medicines and care; and their ability to adapt to changing health needs and the health system context.

STRIDES for Family Health—a USAID-funded project in Uganda implemented by MSH in partnership with Jhpiego, Meridian International, and the Ugandan organizations Communication for Development Foundation and the Uganda Private Midwives Association—recognizes the importance of the private sector in the delivery of reproductive health, child survival, and family planning services and supports selected private medicine sellers in improving and increasing access to quality essential services in remote areas. STRIDES will adapt an "EADSI/SDSI Private-Sector Drug Seller Model" package to train and promote the accreditation of the private drug sellers in STRIDES project districts, using the ADS standards approved by the Uganda National Drug Authority (NDA). This approach will also open up new avenues for interventions, especially in the areas of family planning and child survival.

2.5   ASSESSMENT ACTIVITIES

SDSI conducted an assessment of the ADS supply chain with the aim of identifying bottlenecks and proposing interventions to address them. Specific activities carried out during the assessment included:

1) Performing a desk review of previous supply chain assessments involving the private sector in Uganda;
2) Conducting key informant interviews with key stakeholders, including central-level wholesalers, the NDA, and distributors of consumer goods and services in order to characterize their understanding of the issues, opportunities, and challenges;
3) Carrying out field visits to 15 drug shops in the five districts of ADS implementation (Kamuli, Kamwenge, Kibaale, Kyenjojo, and Mityana) to characterize their challenges with the current supply chain system and how they would change it;
4) Conducting key informant interviews with district level wholesalers to understand supply chain issues related to specific ADS commodities and how the wholesalers relate to drug shops;
5) Interviewing drug shop association heads to understand their role in the drug shops supply chain and any additional roles they can play;
6) Developing an assessment report and recommending possible strategies for improving the ADS supply chain;
7) Conducting an options analysis to evaluate the strategies and propose best options for improving the supply system.

3. METHODOLOGY

Pharmaceutical Systems Africa adopted a descriptive cross-sectional design that used both qualitative and quantitative data collection techniques. The qualitative assessment used questionnaires, observations, and interviews to look at the current supply chain system: forecasting and quantification, selection, ordering, purchasing, transport, dispensing, and record keeping. The quantitative assessment of the ADS looked at the challenges being experienced, opinions on how to mitigate the challenges, and supply chain options.

3.1 STUDY AREA

The survey was conducted in the five districts (Kamuli, Kamwenge, Kibaale, Kyenjojo, and Mityana) where SDSI is collaborating with the STRIDES project to roll out the ADS intervention. ADS was piloted in Kibaale District; the rollout is starting with Kamuli, Kamwenge, Kyenjojo, and Mityana.

The survey was conducted among 85 randomly selected drug shops and eight pharmacies.

3.2 STUDY SAMPLE

Eighty-five drug shops were randomly selected in the five districts. If one of the shops selected was a veterinary outlet, it was dropped and another shop was picked to replace it. A total of 85 shop owners or sellers were interviewed and used for the analysis.

In addition to the 85 drug shops, eight wholesale pharmacies were selected for the survey. This was done to gain further information on the supply chain within a district, specifically the supply chain linkages between the drug shops and the wholesalers. Table 1 shows the number of drug shops and wholesale pharmacies selected, by district.

Table 1.   Number of drug shops and wholesale pharmacies selected, by district

District	Wholesale Pharmacies	Drug Shops
Kibaale	1	28
Kamwenge	0	12
Kyenjojo	2	15
Kamuli	2	14
Mityana	3	16
Total	8	85

In addition, 20 key informants were interviewed for the survey. They were selected based on their knowledge of the operation of drug shops in Uganda. There were two key informants selected from the National Drug Authority (NDA), one from the Ministry of Health (MoH), two from medicines distributors (Abacus Pharmaceuticals and Medipharm), two from fast-moving consumer goods (FMCG) distributors,

(Unilever and Coca-Cola), five District Assistant Drug Inspectors (DADIs), the five district Health Officers (DHOs), and three officials from the drug sellers associations.

3.3   STUDY PROCESS AND PROCEDURE

3.3.1   Desk Review

A desk review of the available literature on the ADS regulatory system was conducted. The following documents were reviewed:

1) The National Drug Policy and Authority Act, 1993
2) The National Drug Policy and Authority Regulations, 1995
3) Private-sector supply chain assessment reports in Uganda
4) Reports from MSH/SDSI project and the NDA on the ADS supply chain
5) The Pharmaceutical Society of Uganda's "Standards of Pharmacy Practice in Uganda"
6) Supportive supervision reports from the drug shops, NDA, and MSH/SDSI project

The goal of the desk review was to inform the study team on the ADS regulatory system so they could identify bottlenecks, propose interventions, and develop options to improve the ADS supply chain.

3.3.2   Standardization and Adoption of Field Questionnaire and Interview Guides

The study team developed a questionnaire based on components of the medicine supply chain, specifically: forecasting and quantification, selection, purchasing, transporting, dispensing, Logistics Management Information Systems (LMIS), and management support. The questionnaire and the key informant guides were then discussed with the team from MSH/SDSI. The tools were pretested for validity and appropriateness. The tools were revised and the issues raised by the MSH/SDSI program and from the pretest were incorporated prior to field data collection.

3.3.3   Data Collection

Questionnaires

Two semi-structured questionnaires, one for drug shops (annex 3) and another for district wholesalers (annex 5), were used for the assessment. Four trained research assistants administered the questionnaires. When necessary, they would paraphrase questions if the respondent did not understand them. The 85 shop owners or sellers and 8 wholesalers were interviewed at their shops, and all of the 93 questionnaires were filled in with the accompanying field notes.

Key Informant Interviews

Two or more people conducted all 20 of the key informant interviews, with one asking the questions and the other taking notes (annex 6). All interviews were recorded to supplement the transcripts. Consent to record the conversation was requested from the respondents, and the interviews began only after consent was given.

Direct Observation

Direct observation was applied to take note of the supply chain–related operations of the drug shops, for example, to see whether drug shop sellers followed the supply chain record-keeping practices, dispensing processes, and stock management.

3.3.4 Data Management and Analysis

The questionnaires completed by the teams were returned to Kampala, where they were carefully reviewed to check for completeness prior to data entry. Data-entry screens were developed using Epidata version 3.1. Afterward, the data were exported to Excel spreadsheets, and then to SPSS, version 12, for analysis.

The recorded interviews were transcribed. Data were entered in an Excel spreadsheet and reviewed to avoid any unwanted or irrelevant words. Themes were identified and information coded. It was manually analyzed and interpreted using manifest content analysis.

The findings in this report are descriptive, coupled with displays using graphs, figures, and tables throughout.

4. RESULTS OF THE SITUATIONAL ANALYSIS

In this report, the supply chain system of drug shops describes the flow of products from the distributor or wholesaler until the medicines are purchased and consumed. The survey results provide information on the supply chain, the challenges experienced, and respondents' thoughts on how to mitigate them.

4.1 RESULTS FROM DISTRICT WHOLESALERS

To ensure steady availability of quality and affordable supply for drug shops, wholesale pharmacies need to have effective up-stream supply chain systems. This survey, therefore, assesses the components of the supply chain at the wholesalers' level.

The districts surveyed are mostly rural, with an average of three pharmacies each providing both wholesale and retail services. These pharmacies have about four staff per pharmacy. The pharmacies have been in existence for at least three years. Table 2 shows some of the pharmacy characteristics.

Table 2.   Characteristics of pharmacies

	Kyenjojo	Kamwenge	Kibaale	Kamuli	Mityana	Overall Average
Number of pharmacies/wholesalers	2	0	4	3	6	3
Average number of staff working at the wholesale pharmacies	4	0	8	4.5	4.3	4.2 ≈ 4

	Kyenjojo	Kamwenge	Kibaale	Kamuli	Mityana	Overall Average
Average number of years the shops have been open	3.5	0	3	13	10	5.9 ≈ 6

Of the people interviewed in pharmacies, half were sellers and half were owners; among the owners, only a quarter of them had a medical background.

4.1.1 Human Resources Issues in Wholesale Shops

All employees performing technical roles in the wholesale shops have a minimum of college training and 62.5 percent have health-related training. Table 3 shows the distribution of different levels of health training that wholesale technicians have received.

Table 3.   Different levels of health training among wholesale technicians

Discipline	Percentage
Nursing	50.0
BSc. Science	37.5
Pharmacy Technician	12.5

4.1.2 Quantification among Wholesale Shops

Although not explicitly referred to as such, wholesale shops quantified their medicine stock requirements. They used both consumption and morbidity methods of quantification. About two-thirds of the pharmacies surveyed used mostly consumption method, while the rest used both consumption and morbidity methods.

> *"We know how people are taking the medicines and then buy accordingly. We have done this for a long time." (A respondent from Kyenjojo District)*
>
> *"We know how much we sell out. We also know the seasons, like for malaria." (A respondent from Kibaale District)*

With regard to challenges experienced in quantification, most respondents indicated changing consumption patterns. However, some indicated experiencing no challenges, and others said they had no idea.

> *"Consumption pattern changes and competition on the market. So we may overstock sometimes or understock." (A respondent from Mityana District)*

4.1.3 Sources of Supplies to the Pharmacies

All pharmacies purchased their supplies locally, and most placed their orders in person with their suppliers. Occasionally, orders were placed by telephone and SMS. Deliveries from the supplier or wholesalers were generally sent by public transport, however, in a few circumstances, the suppliers

delivered them (figure 1). Supplies were usually received within one day, but occasional delays of up to seven days were reported.

	Suppliers sending through Public Transport	Physically collecting from supplier	Delivered by supplier
Yes	88	63	37
No	12	37	63
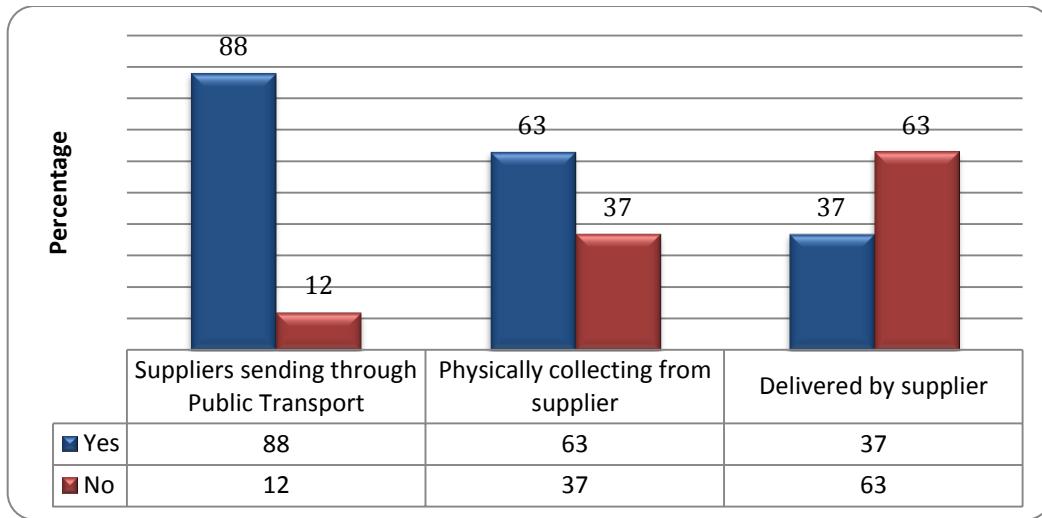
Figure 1. How supplies are delivered from the wholesale shops

Some of the challenges wholesale pharmacies experienced in the supply chain included:

- Delays in delivering the medicines
- Missing items/discrepancy in handling
- Broken bottles or damaged packaging
- Short expiry of medicines
- Finances
- Competition
- The presence of many brands available for one product

4.1.4   Availability of Supplies in Wholesale Shops

Some of the items on the ADS extended list (annex 4) were out of stock at the time of the survey. The reason given was the lack of demand in the private sector because supplies could be obtained from public health facilities. Table 4 shows the items that were out of stock and the reason why.

Table 4.   List of out-of-stock items among the pharmacies sampled

No.	Name of product	Reason for unavailability
1	Aminophylline dehydrate tablets	No demand
2	Artesunate + Amodiaquine	No demand
3	Cetrimide + chlorophenidine	No demand
4	Chloramphenicol eye ointment	No demand
5	Diazepam rectal tubes	No demand
6	Nystatin tablets	No demand
7	Phenoxymethyl penicillin suspension	No demand

8	Silver sulfadiazine cream	No demand
9	Sodium or calcium hypochlorite	No demand
10	Vitamin A capsules	No demand, "given in hospitals"

4.1.5   Business Linkages with Drug Shops

Three-quarters of the wholesale pharmacies sampled conducted business-promotion visits to drug shops. Wholesalers also indicated that drug shops made significant contribution to their business, although most of their business was from walk-in clients (figure 2).
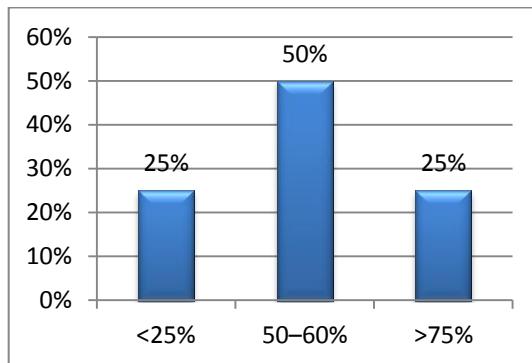
Figure 2.   Percentage of wholesalers reporting drug shops' contribution to business

4.1.6   Restricted Sale of Classified Medicines to Drug Shops

The NDA act restricts the sale of classified medicines to drug shops. The majority of the respondents (62.5 percent) were aware of this, although all admitted that they did not restrict the sale of any product to the drug shops.

> *"We know they are not to buy antibiotics and injectables. But the business has to survive." (Respondent from Mityana District)*
>
> *"We should not sell Class A and Class B drugs. We give them because they will get it from elsewhere and we will lose income." (Respondent from Kamuli District)*

4.1.7   Placing and Processing Orders from Drug Shops

It was reported that most drug shops place small orders and the pharmacies could process them in less than an hour. As such, the pharmacies preferred to have orders placed physically, because that would allow drug shops to cross-check their supplies before delivery as well as learn about some new brands on the market. All respondents indicated that their pharmacies were able to meet at least 60 percent of the drug shops' need.

> *"It's good for them to come and place an order for what they want, see the goods, cross-check, and we pack with them before taking it. They also get to know the different brands available." (Respondent from Kibaale District)*

4.1.8   Transportation of Medicines to Drug Shops

Only a quarter of the pharmacies had either a motorbike or a car dedicated to transporting supplies to drug shops. Reasons given for not having dedicated transportation included that vehicles are expensive to maintain; drug shops buy in small quantities, so it's not cost effective to deliver; and taxis are good enough. However, the respondents with a dedicated car indicated that the car was only used to deliver bulk orders, while small quantities were sent on *boda-bodas*. The pharmacy met transport costs for short distances, but required the drug shop to pay for distances exceeding 20 kilometers.

4.1.9   Discrepancy and Discrepancy Handling

Because orders were placed in person and supplies selected by the drug shops, discrepancies were not common. However, 50 percent of respondents indicated that they had experienced discrepancies in their orders at one time.

> *"Not common. We all physically check the drugs before they are taken." (A respondent from Mityana District)*

4.1.10   Credit and Credit Worthiness

The majority (87.5 percent) of the respondents indicated that they give credit to the drug shops, but this was after a good business relationship had been developed between them.

> *"I give credit, especially to drug shops." (A respondent from Mityana District)*
>
> *"I give credit when a drug shop has paid at least 60 to 70 percent, then give about two weeks to pay up." (A respondent from Kamuli District)*

4.1.11   Logistics Management Information Systems

All wholesale pharmacies interviewed maintained some records pertaining to the supplies they hold. Figure 3 shows the type of records maintained.
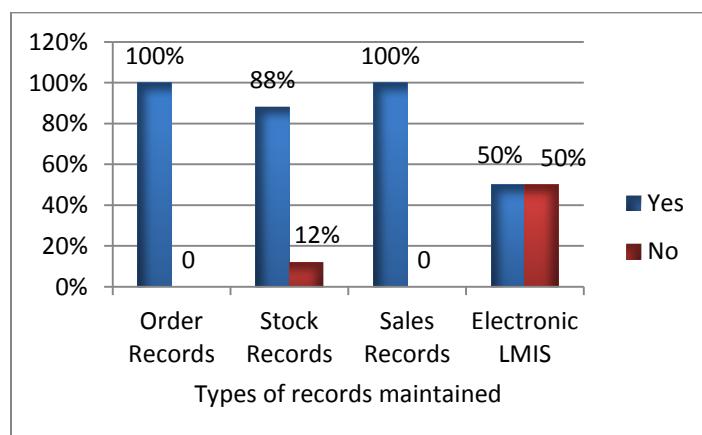
Figure 3.   Availability of records and record systems

The pharmacies, however, do experience some challenges maintaining these records. For example, power failures restrict use of electronic systems, and there is a lack of capacity to operate the electronic systems as well as a lack of time to update the records.

> *"We forget sometimes to update. Manual record management is difficult and bulky. Imagine we have the stock cards for all the products here." (A respondent from Kyenjojo District)*

4.2 RESULTS FROM DRUG SHOPS

4.2.1 Demographics of Respondents

A total of 85 drug shops were surveyed. Among the respondents interviewed, 58 (68.2 percent) were sellers and 27 (31.8 percent) were owners. About half of the respondents indicated that they had worked at the drug shop for less than one year, and about 25 percent for five years or more. The median number of years worked was two.

Ninety-four percent of the respondents were nursing assistants, and about 50 percent of them had had training in at least one of the supply chain components.

4.2.2 Roles in the Supply Chain

Almost all the respondents indicated that they performed all the important supply chain tasks as part as their role at the drug shop. The tasks included forecasting and quantification, ordering, purchasing, transporting, dispensing, and inventory management.

4.2.3 Particulars of the Drug Shops

All the drug shops surveyed had been in existence for at least one year and were relatively busy in terms of their clientele. The mean of daily clientele attendance was 22 clients. Table 5 shows drug shop business activity.

Table 5.   Characteristics of drug shops

The median length of time the shops have been open	5 years	Range: from 1 to 19 years	SD 3.7
The mean approximate number of clients received per day	22 clients	Range: from 1 to 99 clients	SD 16.9
The median number of prescriptions received per day	3 prescriptions	Range: from 0 to 30 prescriptions	SD 5.6

4.2.4 Product Selection and Quantification

The survey also looked at several aspects of the supply chain management system (SCMS) at the drug shop level. All of the drug shops surveyed were carrying out medicine selection and quantification, although not in a systematic way. All of the drug shops selected their products based on the demand.

> *"We order according to how the customers are coming." (A seller in Kibaale District)*

The range of products stocked by the drug shops depended mostly on what clients demanded and, to a lesser extent, influence from suppliers. Thirty percent of respondents indicated that they buy products recommended by their regular suppliers.

> *"Yes. They [the suppliers] tell us about the medicines and realize that we need it so we buy it." (A shop owner from Kyenjojo District)*

Figure 4 shows ways in which suppliers influence drug shops' selection of medicines.
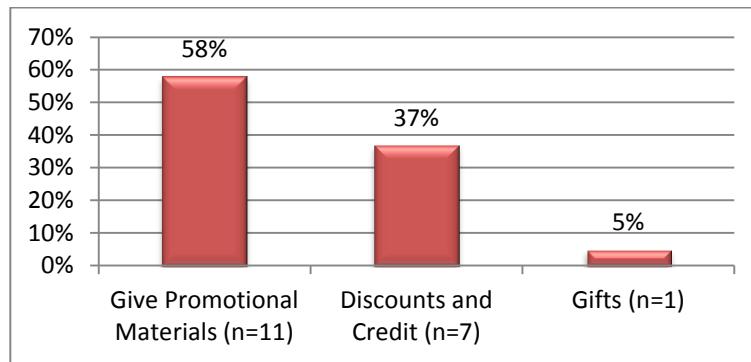
Figure 4.   How suppliers influence what products are stocked

Although the survey instruments did not capture it, the ADS training also plays a significant role in influencing selection.

> *"After the ADS training, the shops now come and they know what to buy. They used to come and ask what to stock and how much. I think the ADS is helping." (A wholesaler in Kyenjojo District)*

4.2.5   Quantification

Since demand from clients was the biggest driver for selection of medicines, the consumption method was the most used method of quantification. However, in some instances the morbidity method was used, such as forecasting using seasonal variations. Figure 5 shows the different quantification methods employed by the drug shops.
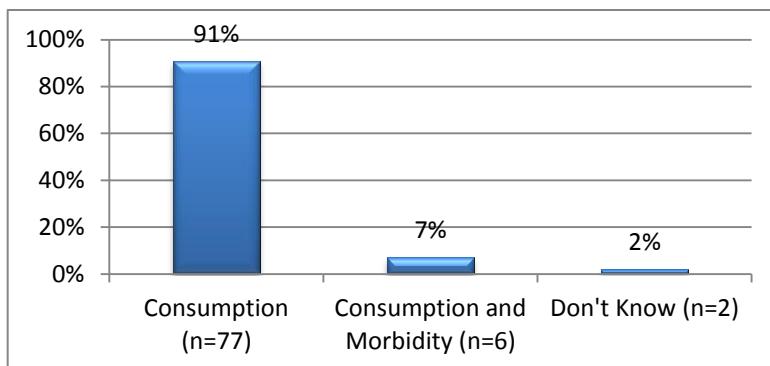
Figure 5.   Method of quantification used by drug shops

> *"I just see the shelves and see the medicines missing or getting finished. I then make my list for medicines that my boss brings every week." (A drug shop seller in Mityana District)*
>
> *"It is easy to know the seasons for some diseases like malaria and how we use some medicines. So when am writing the number to be bought for the month, I add more so that I have enough to last me when she next buys." (A drug shop seller from Kibaale District)*

4.2.6 Availability of Medicines

Using the ADS extended list as tracer medicines, the survey assessed the availability of medicines and whether they were out of stock and for what reason. Every drug shop surveyed had at least one product on the extended list out of stock. The reason for being out of stock was mostly the legal restriction on the medicines stocked by drug shops. Other reasons included: financial constraints, no demand for the medicines, "and lack of expertise." Figure 6 shows the frequency of the reasons given for medicines being out of stock.
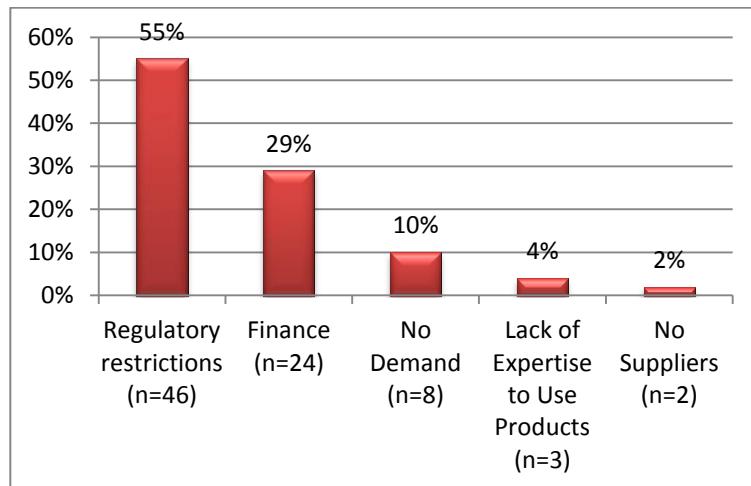
Figure 6.   Reasons for not stocking some products

> *"We don't have money these days. We are paying school fees and we cannot keep our money in stock." (A shop owner in Kamwenge District)*
>
> *"Some of these things people cannot buy them here in Kibaale." (A shop seller in Igayaza, Kibaale District)*

4.2.7 Ordering and Order Management of Suppliers

After drug shops determine their requirements, they place their orders. The choice of source depended on a number of factors. The survey showed that where they chose to source their supplies mostly depended on the price of the medicines. Sixty-five percent of respondents indicated that they would order from wherever the medicines were least expensive. Other reasons for choosing where to order from included their ability to get supplies on credit, convenience, and friendliness.

> *"I have been with them for a long time." (A shop owner from Mityana District)*

Most the respondents had several reasons for choosing a source, and therefore where the order was finally placed varied from one time to the next. Figure 7 shows where drug shops placed their orders.
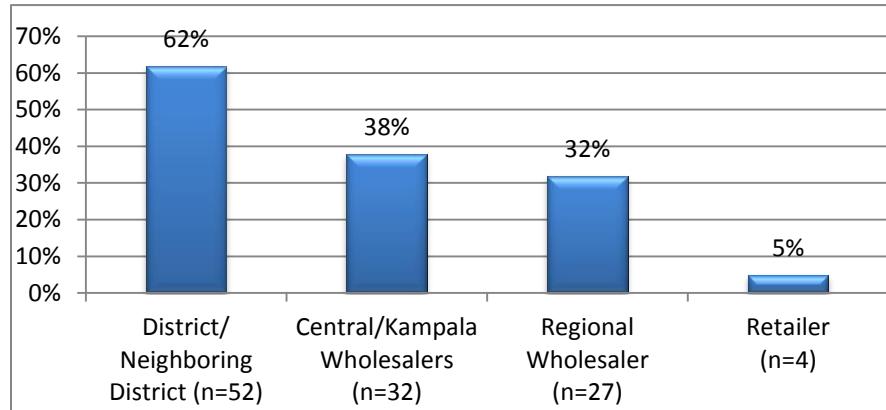
Figure 7.   Sources of supplies for drug shops

Findings indicated that even though the prices were better when buying from central and regional wholesalers, the cost of transport was so exorbitant it would offset any the benefit of buying from them. Figure 8 shows the range of transport costs of medicines procured from different sources.
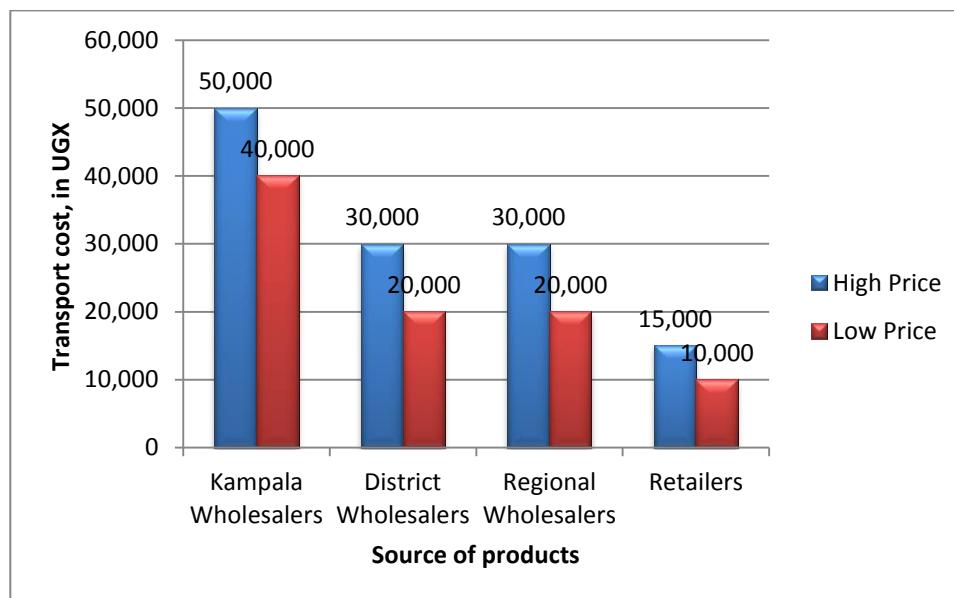
Figure 8.   Cost variation by source of supplies among drug shops

After deciding where to buy from, drug shops placed orders with the supplier using one of several means, such as visiting the supplier physically, telephoning, and sending an SMS. The method most preferred by drug shops was for a drug shop representative to travel to the supplier. Figure 9 shows how drug shops placed orders with the supplier.
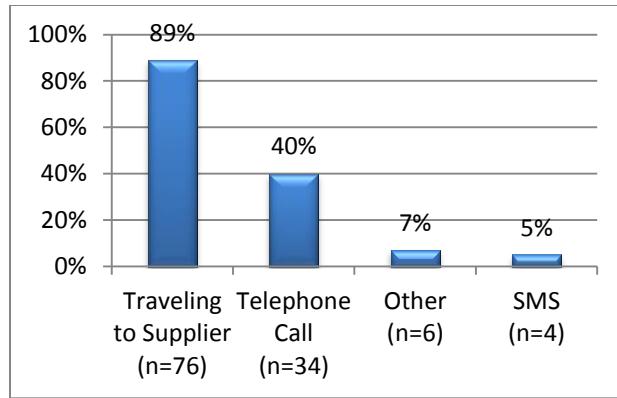
Figure 9. Methods of placing orders with suppliers

> *"She goes to check the medicines like expiry date, the number, etc." (Shop seller in Kibaale District)*

The frequency of ordering varied from once a month to procuring on a daily basis (figure 10). This depended mainly on the cash flow at the drug shop. Other determinants of frequency of ordering included storage space and availability of credit.
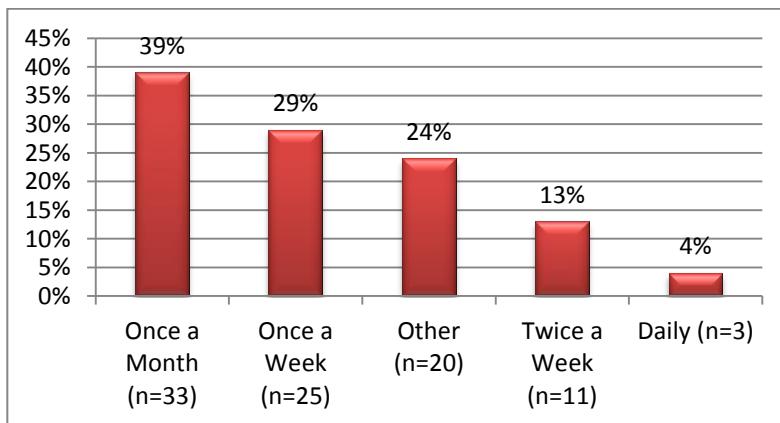
Figure 10. Frequency of ordering

4.2.8   Transportation of Medicines

The most common means of transport for supplies was public transport (bus or taxi), followed by motorcycle. In a few instances, people, cars, or bicycles were also used for deliveries. Eighty-three percent of the respondents indicated that wholesalers transported the medicines to them, and 74 percent of them did not pay transport costs. For those who paid for transport, the fees charged ranged from about UGX 20,000 to UGX 30,000.

Drug shops, however, reported experiencing some challenges during transportation, including the high cost of transport; poor road networks, especially when it rains; breakage of medicines; missing medicines; and delays in transport.

4.2.9   Storage Capacity and Infrastructure

The storage capacity and infrastructure of drug shops was assessed using several indicators. In seven of the eight areas assessed, more than 90 percent of the drug shops were found to be adequate. Figure 11 shows performance of the drugs shops across the eight indicators.
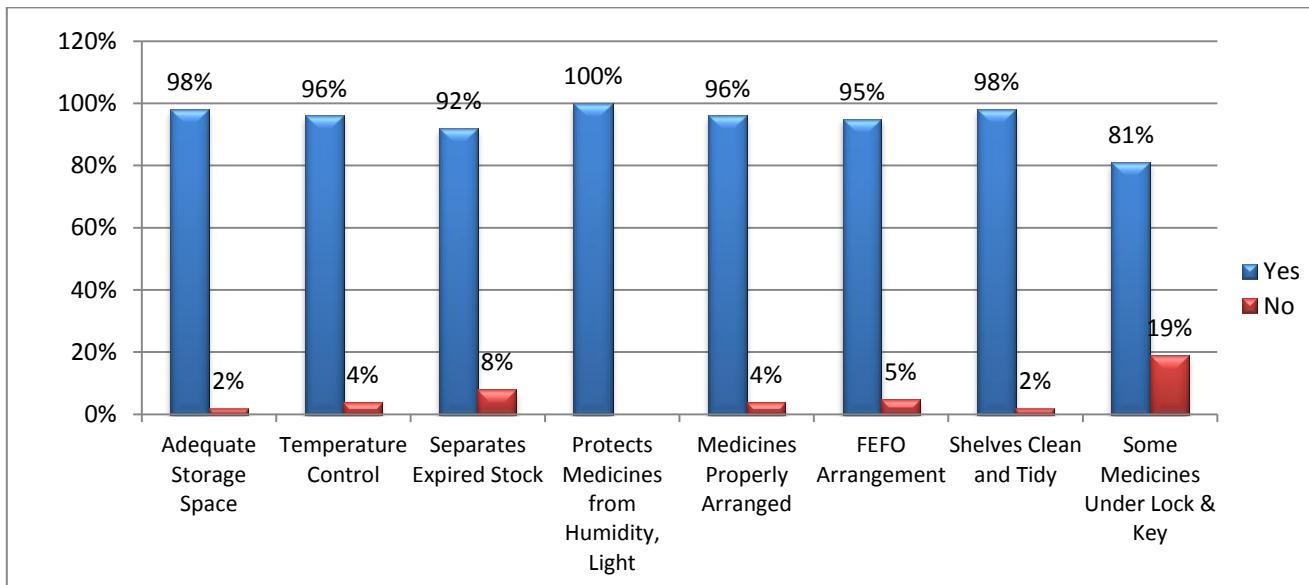
Figure 11. -Storage capacity and infrastructure of drug shops

4.2.10   Logistics Management Information Systems

Drug shops kept several kinds of records about their operations: 85 percent kept order records, 77 percent sales records, 73 percent stock records, and 68 percent dispensing records. However, 37 percent of the drug shops indicated having challenges in generating and maintaining records. Some of the challenges drug shop respondents said they experienced in LMIS included:

- Can't write everything, too much information
- Clients can't disclose personal information
- Difficult to fill out the forms
- Don't know how to use the book
- Don't have enough books
- It only takes account of full doses
- Many patients at once, and you end up not filling it out
- Time is not there
- Need to train other staff
- Need more training about how to do this

4.2.11   Inventory Management

Just over half of the drug shops surveyed did not experience significant stock loss, and 49 percent of the drug shops reported losses due to expiry, 33 percent due to damages, and 13 percent due to theft.

Regular stocktaking is an important activity in inventory management. However, of the 28 drug shops that responded to the question, only 64 percent carried out stocktaking at least once a year. Figure 12 shows the frequency among respondents of stocktaking in drug shops.
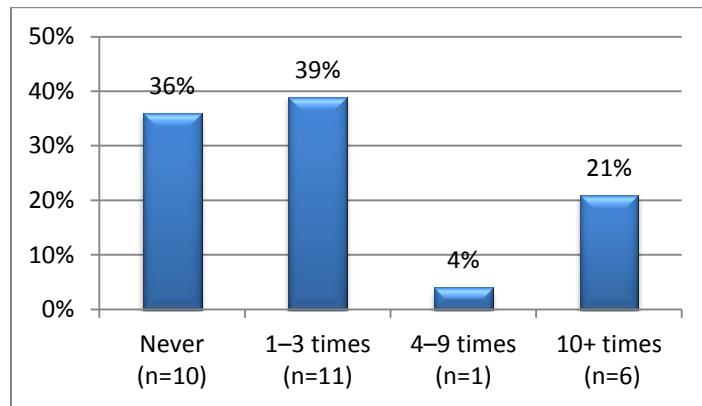
Figure 12. Number of stock counts in one year

4.2.12   Expiry of Medicines

While not a significant problem among drug shops, the inappropriate handling of expired medicines still exists. Although 55 percent of respondents indicated taking expired medicines to the DADI or NDA, 45 percent of them still either threw them away or burned them.

4.2.13   Management Support

Effective implementation of activities of the SCMS requires elaborate management support. The management support for the supply chain at the drug shops was assessed during the survey; figure 13 shows the management support systems in place.
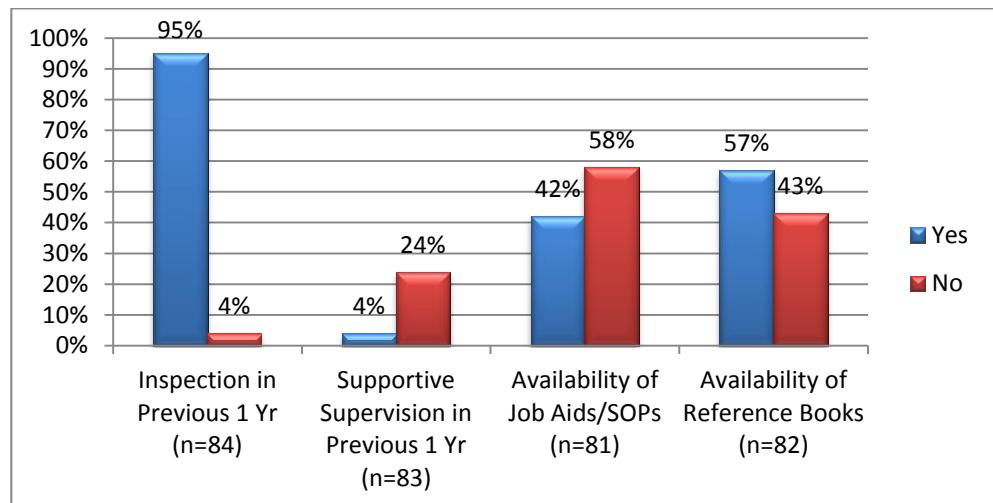
Figure 13. Management support systems in the drug shops

In order to see the effectiveness of the supply chain system, the availability of medicines on the extended list was assessed. All of the products on the extended list were found out of stock in at least one of the drug shops. We identified items that were out of stock in more than 50 percent of the drug shop surveyed; table 6 shows 13 of the most frequently out-of-stock items.

Table 6: The 13 most out-of-stock medicines on the ADS extended medicines list

No.	Product	Availability n (%)
1	Aminophylline tablets	19 (22.4%)
2	Nitrofurantoin 100mg tablets	37 (44.6%)
3	Phenoxymethyl penicillin suspension	19 (23.2%)
4	Benzyl benzoate lotion 25%	32 (39.5%)
5	Benzoic acid + salicylic acid ointment 6% +3%	32 (38.1%)
6	Artesunate /Amodiaquine tablets	25 (29.8%)
7	Cetrimide +Chloramphenicol 0.5% +0.05%	26 (30.6%)
8	Chlorhexidine gluconate 20%	23 (27.1%)
9	Calcium or sodium hypochlorite solution 5%	31 (36.5%)
10	Diazepam rectal tube	0 (0%)
11	Diazepam tablets or injection	39 (47.6%)
12	Vitamin A capsules	14 (17.3%)
13	Malaria rapid diagnostic test strips	8 (14.8%)

Figure 14 summarizes the major challenges to the supply chain for drug shops, linking them with the step in the supply chain system at which they occur.

Planing of Demand
- Lack of acurate consumption information
- Unskilled human resources

Procurement of Medicines
- High medicine prices
- Out of stock
- Limited financing

Delivery of Medicines
- Delayed deliveries
- Inappropriate transport mechanism

In-District Distributions
- Poor infrastructure
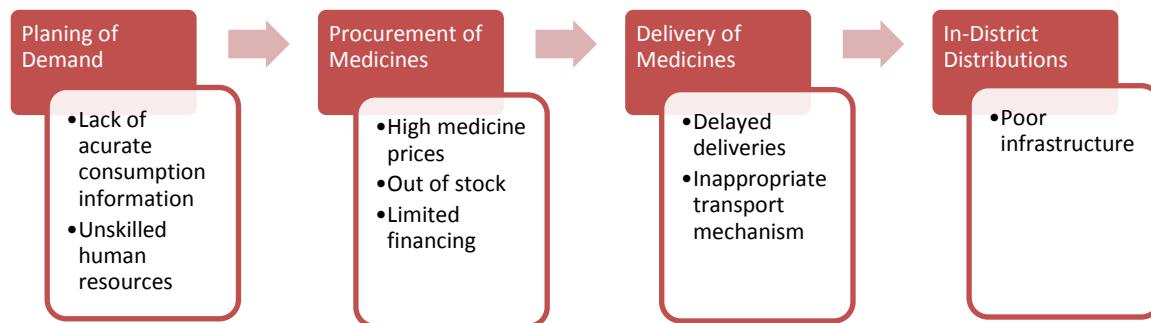
Figure 14. Summary of supply chain challenges

(Adapted from Pross Nagitta Oluka et al. Tackling supply chain bottlenecks of essential drugs: a case of Uganda local government health units.)

Figure 15 is a schematic presentation of the supply chain management system for drug shops, starting with wholesalers and ending with consumers in the community.

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        ┌──────────────────────────────────────────┐
        │   Central/Kampala Wholesalers/Distributors │
        └──────────────────────────────────────────┘
                          │
                          ▼
              ┌──────────────────────────┐
              │  Regional Center Wholesalers │
              └──────────────────────────┘
                   │              │
   ╭───────────────╮              ▼
   │ Neighboring District │   ┌──────────────────┐
   │    Wholesaler        │   │ District Wholesalers │
   ╰───────────────╯        │  and Retailers      │
           │                 └──────────────────┘
           ▼                          │
      ╭──────────────╮                │
      │  Drug Shops  │                │
      ╰──────────────╯                │
           │                          │
           ▼                          ▼
        ┌──────────────────────────────────┐
        │           Communities            │
        └──────────────────────────────────┘
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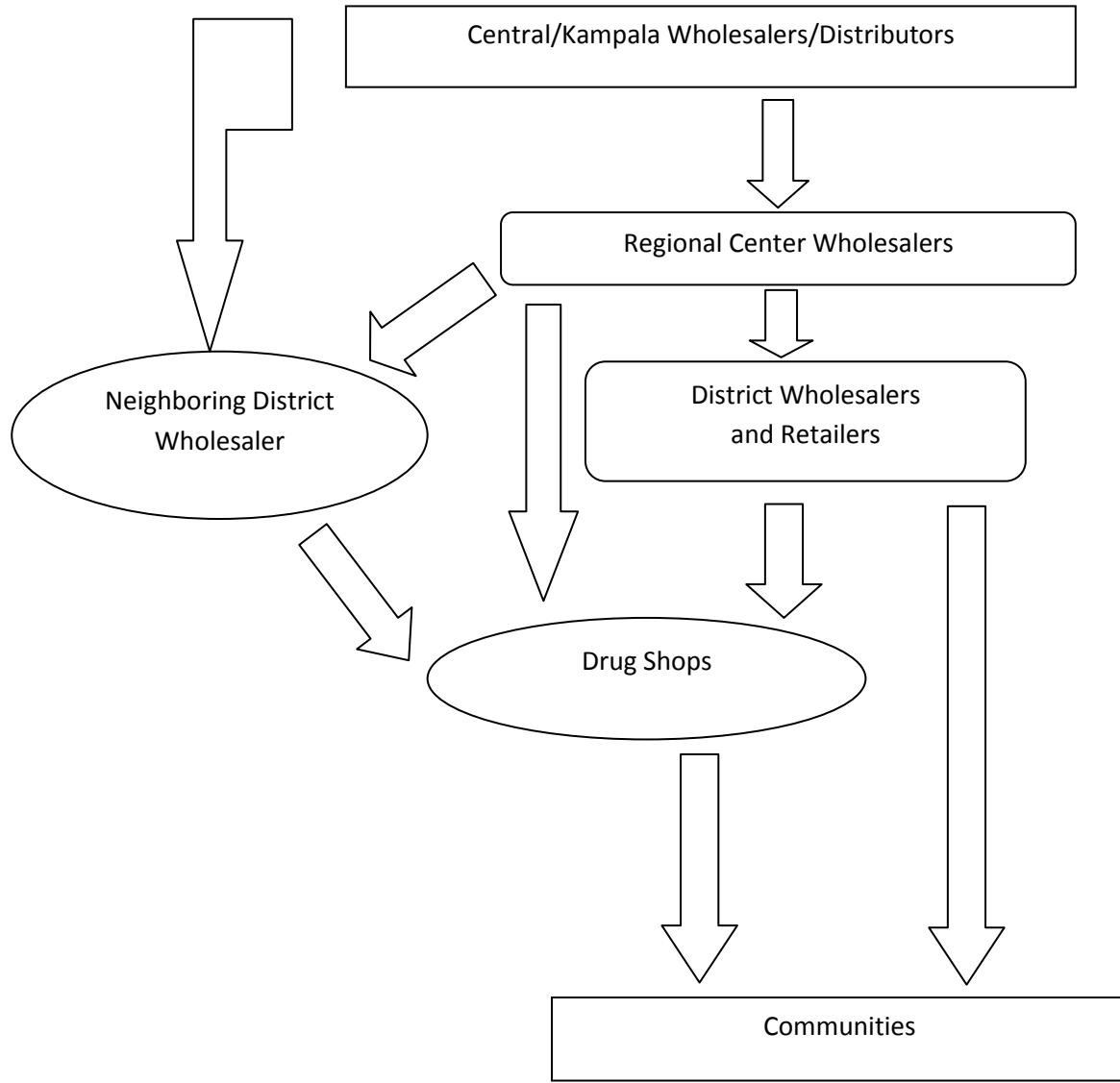
Figure 15. Summary illustration of the ADS supply chain in Uganda

4.3   DESCRIPTION OF OTHER SUPPLY CHAINS IN UGANDA

In addition to the focus on the supply chain management system at the drug shop level, we also looked at the SCMS of two central-level medicine distributors who applied different approaches to medicine distribution as well as two large suppliers of fast-moving consumer goods. The intention was to compare their supply chain systems with that of drug shops and borrow best practices to inform the ADS supply chain. These organizations were selected for comparison because of their success in ensuring that their products reach the remotest areas of Uganda. Key informant interviews were held with Century Bottling

Company and Unilever Uganda Ltd. as dealers in fast-moving consumer goods, and Medipharm Sales Ltd. and Abacus Pharmaceuticals Ltd. as dealers in the distribution of pharmaceuticals in Uganda.

4.3.1   Unilever Uganda Ltd.

Unilever Uganda Ltd is one of the biggest distributors of fast-moving consumer goods in Uganda, dealing mostly with Close Up toothpaste, Royco, Blueband, Omo, Sunlight, Vim, Lifebuoy, Vaseline, Fair and Lovely, Heartbrand, and Rexona, among others.

An efficient supply chain system and high demand for Unilever products by Ugandan communities have enabled the company to survive in Uganda for a long time, and its products reach the most remote and hard-to-reach areas of the country. The Unilever system is diagramed in figure 16.
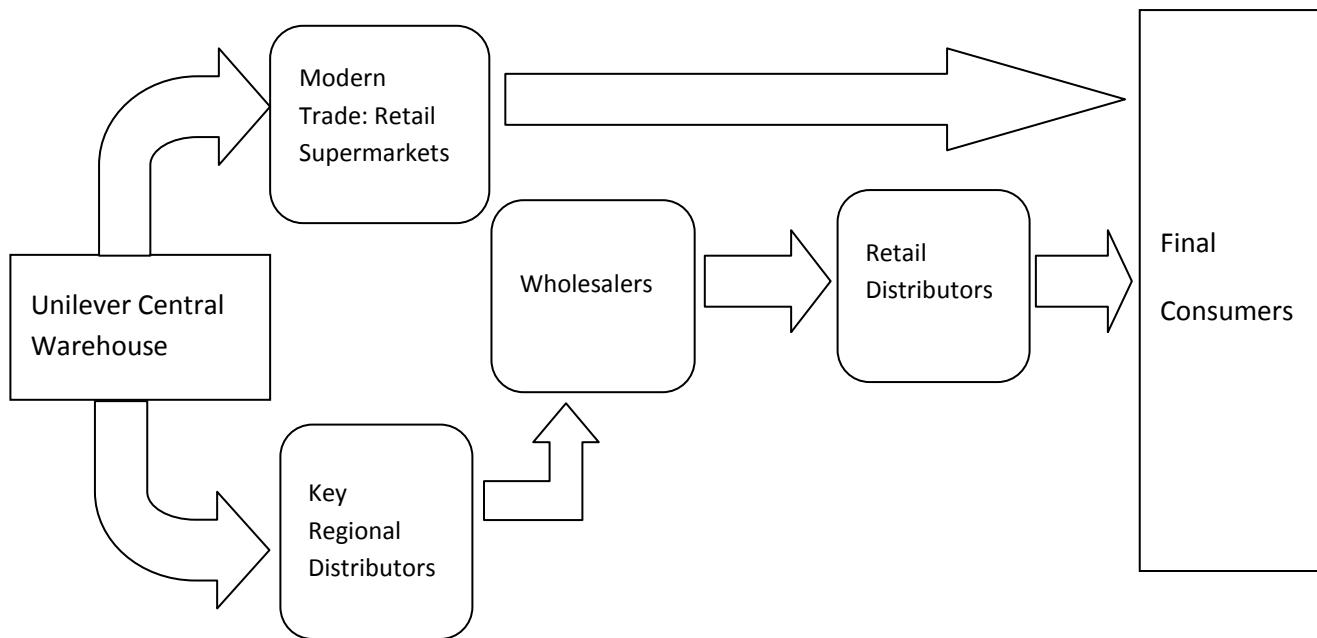
Figure 16. Illustration of the Unilever (U) Ltd. distribution chain

Unilever (U) Ltd. is the sole source of Unilever products and distributes them through a chain of key distributors throughout Uganda. Unilever signs memoranda of understanding (MOUs) with its key distributors, stipulating targets, area of coverage, and other responsibilities. The targets are always challenging, and it's incumbent on key distributors to endeavor to achieve them. Unilever continuously reviews the performance of the key distributors to ensure that targets and coverage are achieved and remote areas are covered.

Unilever then focuses on creating demand for its key distributors through promotion and market campaigns, handling complaints from customers, monitoring product quality, and setting and monitoring product prices. It also transports goods to the key distributors on a regular basis. In the opinion of our respondent, the success of the Unilever SCMS depends on the following:
- Maintenance of high quality of the products, which leads to self-advertising by word of mouth;
- Maintenance of reasonable prices to the end user;

- Customer demand creation, e.g., advertising;
- Transportation to the regional distributors only;
- Regular market surveys on price and quality of competing brands;
- The existence of area managers, who give market information, help set targets, and ensure that the targets are met;
- The existence of territory managers, who monitor achievement of targets.

While the Unilever supply chain system is seen as a success, it does face some challenges:

- *Finances*: Key distributors need access to credit and finance to grow their businesses, especially with the kind of stretching targets that Unilever sets.
- *Interest rates*: High interest rates have greatly affected Unilever's distributors, as they don't want to borrow the money they need to expand their businesses.
- *Transport*: Unilever delivers to key distribution points. This is very expensive and eats into the profit margin, but Unilever can't devolve the execution of this responsibility because it's a core supply chain function since Unilever Uganda does not manufacture products.
- *Changes in tariff*: New government budget has introduced a 10 percent tariff, which has affected prices.

Despite these challenges, it is the opinion of the respondent that health products can successfully utilize the Unilever model to reach remote areas.

> *"I am confident that consumer product distribution channels can be utilized for specific health products." (Supply Chain Operations Manager, Unilever Uganda Ltd.)*

4.3.2 Century Bottling Company Ltd.

Century Bottling Company Limited (CBC) is owned by Coca-Cola Sabco (CCS) and has two plants, in Mbarara and Namanve, near Kampala, and 664 employees.

CBC manufactures and distributes both carbonated soft drinks—e.g., Coca-Cola, Stoney, Coca-Cola Zero, Fanta, and Krest—as well as noncarbonated drinks—e.g., Minute Maid Juice and Dasani water.

Direct and Indirect Distribution

CBC uses both direct and indirect distribution systems for its products (figure 17).

Direct distribution. This channel accounts for about 5–10 percent of sales volume and involves direct deliveries to modern trade clients such as supermarkets, gas stations, institutions, hospitals, and banks. A driver-salesman picks up products for clients, delivers to them, invoices them, and later picks up the money. Orders are supplied within 12 hours. This is usually very intensive work because orders are small and one track can have orders for about 30 customers. It's incumbent on the drivers to map out orders on the same route so that delivery is not only timely but also streamlined in a rational manner.

Driver-salesmen also supply kiosks and other roadside stores around the country. This traditional aspect of trade provides another distribution channel that CBC utilizes directly.

Indirect Distribution. This distribution channel is used to supply distributors throughout the country. CBC delivers to the stores of the distributors, who in turn, using their means, distribute to the retail outlets within their radius. Each distributor therefore needs to have at least two trucks and motorcycles and is assigned a territory to manage.
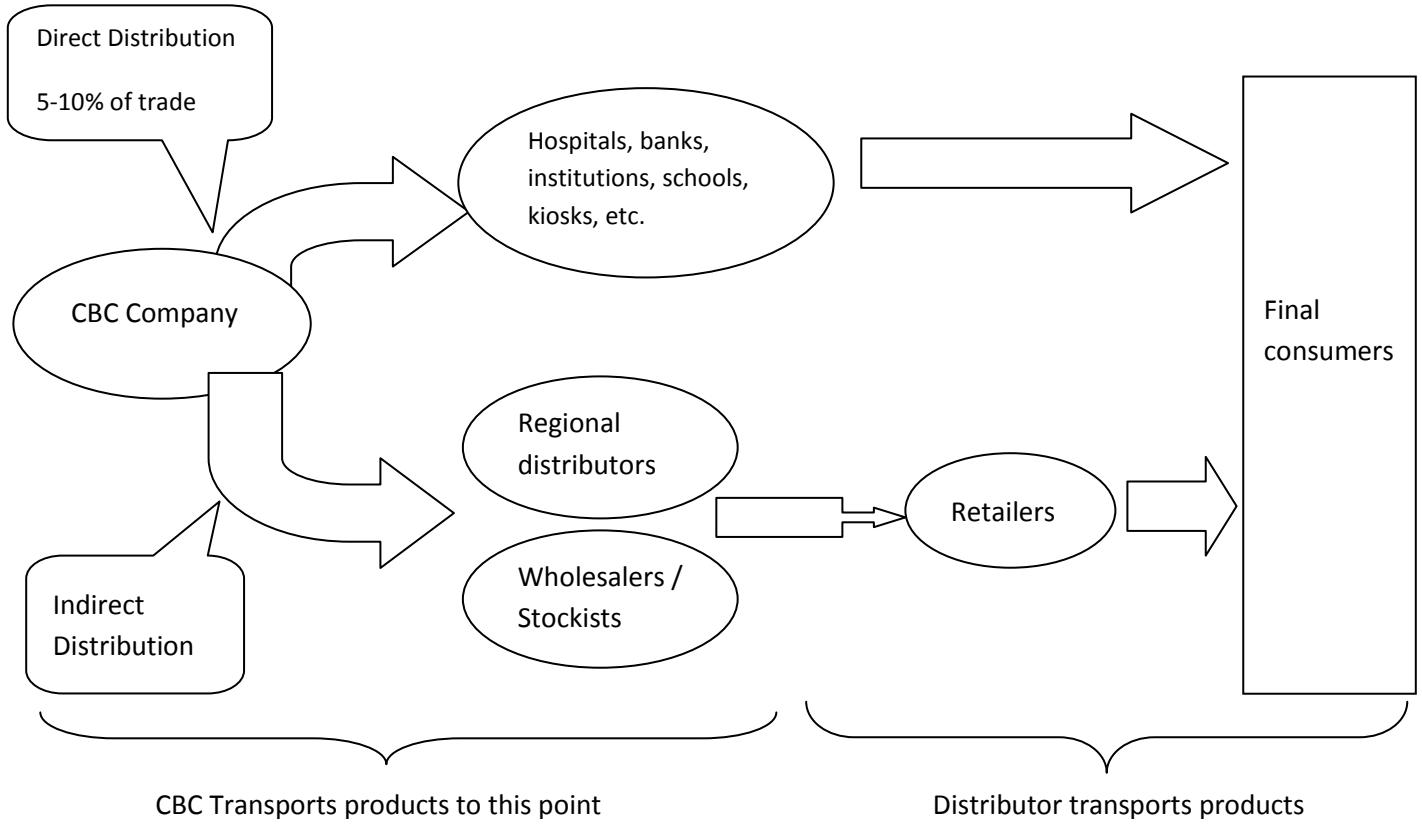
Figure 17. Illustration of the Century Bottling Company supply chain

Ensuring Last-Mile Distribution Strategy

To ensure last-mile distribution, CBC embarked on a customer mapping exercise many years ago and came up with a comprehensive database of about 65,000 retail outlets distributed across Uganda. Through this map, CBC can know its clients by name and location. All CBC main retail outlets have CBC branded refrigerators and, to date, refrigerators have been placed in around 31,000 outlets. Each of the customers receives a phone call either directly from CBC or indirectly, from a distributor, every week.

The CBC structure is robust, utilizing regional sales managers and about 350 account managers who manage 300–500 customers. Each account manager has a GPS-enabled phone for placing orders, which enables the system to reconcile instantly when orders are placed, enabling CBC to monitor demand and inventory centrally on a daily basis. Account managers pick up orders and/or liaise with distributors to ensure prompt delivery. Between them, distributors and CBC staff cover every distribution route daily. By doing this, CBC is able to ensure constant availability of its products, even in the most remote places.

Incentives for Different Actors

- *Refrigerators*. CBC offers coolers to retail points, usually giving out about 5,000 coolers every year.
- *Guarantees with banks*. CBC offers its partners guarantees with banks.
- *Tricycles*. CBC distributes free three-wheel vehicles (tricycles).
- *Margins*. Margins on sales ranged from 5 percent to 16 percent; the bigger the sales the bigger the margin.
- *Advertising*. CBC created demand by advertising the product.
- *Corporate social responsibility activities*. CBC performed corporate social responsibility activities to be in touch with the communities.
- *Transport*. CBC provided transport to CBC outlets.

Challenges Experienced with the Current Model of Distribution

- *Infrastructure*. The general state of the infrastructure is poor. This magnifies the maintenance costs for the tracks.
- *Network*. The order pick up system depends entirely on a good network, and sometimes orders are not picked up because of lack of a 3G network.
- *Returnable Containers*. Sustainability of the business depends on return of the empty bottles. Therefore, if deliveries are made to Koboko, the empty containers need to be brought back.
- *Cooler Assets*. These go through a lot of abuse, and some parts of the country lack electricity. In fact, CBC is developing solar coolers for distribution in Northern Uganda.
- *Lack of Transporters Who Can Cope with CBC Volume*. This has hampered CBC's desire to outsource transport services, such that it focuses on its core business.

Contractual Obligations of the Different Players in the CBC Supply Chain

CBC factory prices are fixed everywhere in the country, and supply chain costs are the responsibility of CBC. Leaflets are distributed all over the country, there are radio announcements, the company conducts client simulations to check prices, and the sales teams monitor and evaluate prices, and also do spot checks to ensure that there are no major disparities in price.

Can Health Products Utilize the Same Supply Chain Model?

The respondent felt that the CBC model could work well, especially for nonprescription medicines.

> *"It should be able to work, especially for nonprescription medicines. We have around 250 distributors, and each has an average of three vans. Each drives on a particular route and covers around 50 kilometers every day. Every outlet receives at least one call every week. We deliver to the last mile, and all he has to do is to sit and wait." (Country Manager, Logistics & Customer Services, Century Bottling Company Ltd.)*

4.3.3 Medipharm Sales Ltd.

Medipharm Sales Ltd. imports and sells a limited range of pharmaceutical products that are popular in the Ugandan market on behalf of Medipharm Industries (EA). Among the imported products are Seven

Seas products such as Pure Cod Liver Oil and Jointcare, and Haliborange. Other products include Spironolactone 25 milligrams, male contraceptives such as Contempo condoms, among others.

Description of the Medipharm Sales Supply Chain

Medipharm Sales selects its products based on surveys carried out in the market. The survey findings inform which products it should obtain market authorization for, with the goal of eventual importation. Sometimes consignments are brought in based on speculation, but to a large extent volumes to be imported are based on consumption data that has been captured in their system over time.

Medipharm Sales does not have an MOU with any of its clients to stock its products, but it supplies whomever places an order, and it is authorized to conduct pharmaceutical business in Uganda. Therefore, clients place orders directly with the company, either through telephone calls or by physically giving them to salesmen. Orders are prepared at the Medipharm warehouse located In Bweyogerere, and then deliveries are made. Products are delivered to clients in the central business district of Kampala and surrounding areas using Medipharm delivery vans. Courier services are outsourced to deliver to clients up-country.

Challenges with Distribution of Commodities

- Timely delivery is the biggest challenge, because although clients expect this, in many instances it is not achieved.
- Transportation is a challenge because of fleet maintenance for local deliveries and lack of capacity to deliver up-country.
- Pilferage is rampant, especially during deliveries in the central business district, and leads to losses for the company.

4.3.4   Abacus Pharma (A) Ltd.

Abacus Pharma (A) Ltd. is one of the largest private medicine distributors in Uganda. It has a large network of wholesale and retail outlets spread all around the country and distributes a wide range of medicinal and consumer health products. Abacus runs 11 outlets in different parts of the country, six up-country and five within Kampala. It also works with several of the wholesale pharmacies around the country.

Description of the Abacus Supply Chain

Each of the 11 outlets operates with some degree of independence, with the Branch Manager being responsible for preparing orders and sending a requisition to the head office in Kampala. Consumption statistics and market intelligence at the branch guide the Branch Manager in selection of the medicines and quantities to order. Outlets are encouraged to maintain six months' worth of stocks to ensure that they don't run out.

Abacus has a big warehouse in Nakawa. Experienced supervisors and managers, assisted by several support staff, operate the enormous space. The central warehouse is ISO certified and operates using good inventory practices such as FIFO, FEFO, and temperature monitoring, and it has clearly identified

areas for cold chain and quarantine. For example, Flamingo products that were banned by the NDA have been quarantined. All outlets run their own stores and replicate the good practices of the central stores. Abacus uses the Tally inventory management system, and it is used by both central and outlet stores. Recently an enterprise resource planning (ERP) management system was acquired to integrate all the outlets and departments.

Abacus established the 11 outlets as a means of reaching the people and serving them in a holistic manner, while at the same time ensuring that standards are maintained. Deliveries to Kampala outlets are outsourced to DAKS couriers, while up-country deliveries are made by using the Abacus fleet of vehicles. Beyond the 11, Abacus works with other wholesalers, and deliveries to them is challenging. Sometimes delivery services to such clients are outsourced and sometimes the clients organize their own deliveries.

The Abacus supply chain system has so far been effective in ensuring steady supply of goods at the 11 outlets, and therefore can be considered for drug shops located in extremely rural areas.

> *"Certainly, I suppose it can, considering that most drug shops are located in extremely remote areas. Also, the cost of good inventory management tools may be expensive, considering their turnover." (General Manager, Sales and Marketing, Abacus Pharma (A) Ltd.)*

5. RECOMMENDATIONS AND CONCLUSIONS FOLLOWING THE SITUATIONAL ANALYSIS

Supply chain management systems involve linked activities from production up to the final consumer. An efficient SCMS should have a steady supply of goods, delivery to the final consumer that is timely, in good quality, in the right quantity, and at a reasonable cost. The final consumer should then put the product to its intended use.

5.1 STEADY SUPPLY OF MEDICINES FROM LOCAL PHARMACIES

One of the key attributes of an efficient supply chain system of medicines is having a steady supply of medicines. Research findings showed that drug shops got their supplies from wholesale pharmacies at central, regional, or local levels. Although they did not exclusively buy from one source, their main sources of supply were local pharmacies. Findings showed that when local pharmacies ran out of stock, drug shops used regional or central wholesalers as secondary sources. However, regional and central wholesalers were not a preferred source because of delayed deliveries, high transportation costs, and their inability to respond to emergency medicine demands. Therefore, to ensure efficiency in the ADS supply chain system, local pharmacies can be considered as the optimal source of medicine supplies for drug shops.

5.2   GOOD PLANNING BASED ON ACCURATE RECORD KEEPING

A steady supply of medicines by local pharmacies requires good planning, and good planning thrives on reliable information, which, in turn, depends on the maintenance of good records. For these reasons, local pharmacies must maintain reliable records in order to generate accurate information. Survey findings, however, indicated that local pharmacies experienced challenges in record keeping, which resulted in their having inaccurate information available for planning and forecasting medicine demands. This necessitates that local pharmacies have the requisite inventory tools and human resources to maintain their records. While the technical staff was found to be adequate in terms of qualifications and numbers, the cost of a good inventory management tool might be prohibitively expensive for local pharmacies, as reported by one of the central wholesaler respondents. The capital investment required for a good inventory management tool can only be afforded by large organizations. It would, therefore, be ideal if big organizations like Abacus and Surgipharm (U), Ltd. were encouraged to establish local pharmacies or work with local pharmacies, where they exist.

5.3   TIMELY AND COST-EFFECTIVE DELIVERY OF MEDICINES

A steady supply of medicines for drug shops also requires a timely and cost-effective mechanism for delivering medicines to local pharmacies. Delayed deliveries were reported as one of the challenges faced by local pharmacies. This has been corroborated by several studies that have reported high costs of transport and poor infrastructure as major reasons for delayed deliveries. Located in mostly remote, hard-to-reach areas, drug shops experienced problems of poor infrastructure and long distances to the urban centers where regional and central wholesalers are located. Because drug shops procure in small volumes, the unit cost of transport is high. For timely and cost-effective delivery, drug shops need to mostly buy from local pharmacies, and the local pharmacies need to ensure adequate stocks are available at all times. Because local pharmacies can procure reasonably bigger volumes, the unit transport cost is low.

5.4   LOCAL PHARMACIES AND DRUG SHOPS LINKAGES

Overall, walk-in clients provided the biggest business to local pharmacies. However, about three-quarters of the local pharmacies indicated that drug shops contributed more than 50 percent to their business. This contribution is significant and, as such, local pharmacies naturally have a vested interest in the operations of the drug shops. The survey indicated that local pharmacies, to some extent, influenced operations at drug shops. For instance, they conducted promotional business visits to drug shops; sold them classified medicines even when they knew it was illegal; tried to influence what drug shops stocked by recommending certain brands; provided drug shops with credit; and, sometimes, covered transport charges of medicines to drug shops.

With these linkages, local pharmacies can play a significant role in influencing improvements in the supply chain systems at drug shops, such as influencing inventory management practices. Using the technical staff at local pharmacies, drug shops could be helped to maintain records, and select and quantify appropriately. Local pharmacies would be aiding drug shops in managing their inventory as well as supplying them with medicines. And because it is in their business interest, the local pharmacies

could be expected to keenly monitor stocks at the drug shops. This is akin to a modified Vendor Managed Inventory (VMI) model.

Moreover, local pharmacies' interest and involvement in inventory management of drug shops would help them to accurately determine the demand for medicines emerging from drug shops and to plan appropriately.

5.5   TRAINING AND SUPPORT FOR DRUG SHOP SUPPLY CHAIN ACTIVITIES

Nursing assistants made up more than 90 percent of the staff and performed all supply chain activities at the drug shops. The basic training for nursing assistants does not provide adequate knowledge and skills to take up the supply chain roles they play at the drug shops. Therefore, nursing assistants need to be supported through training and supportive supervision to effectively carry out their responsibilities. Through linkages with local pharmacies, drug shop staff could also be mentored. Respondents from local pharmacies reported that after the ADS training, there was an improvement in selection, quantification, and ordering of medicines. With regular training, increased supportive supervision, and support from local pharmacies, activities in the supply chain systems of drug shops can be sustainably improved.

5.6   DELIVERY AND DISTRIBUTION TO DRUG SHOPS

Both local pharmacies and drug shops indicated challenges in transporting supplies to their facilities. Transportation challenges are universal, particularly for deliveries to rural areas, regardless of whether medicines or FMCG. Because drug shops procure in small volumes, it is more cost effective to use a motorcycle than a vehicle, as reported by one of the local pharmacy respondents. Use of motorcycles to deliver medicines to drug shops would be preferred, as these can move more easily into remote areas where drug shops are located and pharmaceutical services are inadequate. This could be sustainable, as many local pharmacies indicated a willingness to cover such transport costs.

5.7   CONCLUSIONS

Drug shops are mostly located in remote, hard-to-reach rural areas, and these areas that have low access to essential medicines. Drug shops play a significant role in ensuring access to medicines in the remote areas; however, there are many challenges to SCMSs for drug shops. Such challenges ought to be addressed in order to enhance the roles drug shops play.

A lot can be learned from distributors of fast-moving consumer goods and the central wholesale pharmacies by looking at how they have been able to adapt to some of the universal challenges. For example, the poor infrastructure affects all supply chain systems, regardless of the products. Distributors of FMCG have adapted to this by working through key distributors, timely delivery of goods, and closely monitoring the performance of their agents, while central pharmaceutical distributors have established outlets in different up-country centers. In all these cases, the focus is on ensuring steady availability of goods for the key distributors and the outlet to ensure that the consumers get them when they need them. This requires a robust inventory management system, which may not be in the reach of

drug shops. Therefore the SDSI program could adopt a system whereby local pharmacies assist the drug shops they supply in managing their inventory—a modified VMI.

6. THE OPTIONS ANALYSIS

6.1 INTRODUCTION

The options analysis looked at the current supply chain management system for the drug shops and compared it with the SCMSs of Coca-Cola, Unilever Uganda Ltd., Abacus, and Medipharm Sales Uganda Ltd. In the analysis, Pharmaceutical Systems Africa looked at key performance areas, including planning demand, development of linkages, procurement, distribution of supplies, inventory management, and financial management. PSA assessed and compared how the different SCMSs operated in order to achieve success (table 7).

Each of the four organizations assessed attributed the success of their SCMS to up-to-date and quality information available for planning, developing, managing, and sustaining a wide network of loyal agents; vigorous marketing and promotional programs; and a rapid product delivery system.

Three of the organizations used Enterprise Resource Management software to manage a Vendor Managed Inventory system with their key clients. Using this software, they collected and managed inventory information from all their key clients and had been able to sustain strong linkages.

6.2 OPTION ANALYSIS METHODOLOGY

PSA looked at bottlenecks in the current drug shop supply chain management system and borrowed strengths of the SCMSs that were being compared to in order to propose improvements in the ADS model.

6.3 MODIFIED VENDOR MANAGED INVENTORY

PSA proposed a modified VMI model as an approach that would ensure product traceability and security, which are cardinal in supply chain management systems for medicines. Under the modified VMI, the in-district pharmacies would act as the vendor, just as Coca-Cola, Unilever, Abacus, and Medipharm do in their respective supply chain systems. Because of their close proximity to the drug shops and their adequate financial and human resources, in-district pharmacies can both provide a source of supply that is within close proximity and provide necessary leverage for drug shops in the district to improve their inventory practices. In-district pharmacies will need to be supported so they can play the vendor role effectively. Recommendations for the proposed supply chain management system also appear in table 7.

Table 7. Analysis of four supply chain management systems and proposals for ADS

	Key Performance Areas		Current Drug Shop	Coca-Cola	Unilever	Abacus	Medipharm	Proposed ADS SCMS
1	**Planning Demand**	*Selection*	Over-the-counter and extended list	Done centrally by Coca-Cola	Done centrally by Unilever	Done by outlets but influenced by central office	Selection at collaborating facilities not influenced by Medipharm	The extended list was not adequate to accommodate and to cover all the necessary medicines and dosage forms. We propose adding more products to the extended list.
		Quantification	Done by drug shops	Coca-Cola gives targets to key distributors	Targets given by Unilever	Done by outlets but influenced by central office	Done by outlets with no influence by Medipharm	In-district pharmacies should support drug shops to do their own quantification
2	**Development of Linkages**	*Demand Generation*	Community awareness health campaigns by ADS program	Marketing and brand promotion by Coca-Cola	Marketing and brand promotion by Unilever	Medicine promotion by Medical Reps from the center	Medicine promotion by Medical Reps from Medipharm	Community awareness campaign by SDSI in the short run and by associations in the long run, in conjunction with DHOs through lobbying media house for free air time
		Supply Chain Incentives	Signposts, stationery, white coats	Fridges, tricycles	Presents and other materials	None known	Not known	Signpost, stationery, coats should be supplied by NDA in conjunction with association at fee to the drug shop
		Communication along the Supply Chain	Limited communication between source and drug shops	Close contact with key distributor using ERP system	Close contact with key distributors	Close contact with outlets using ERP system	Close contact with clients	In-district pharmacies to be in close contact with drug shops providing inventory management support for specific products that are vital for managing critical ailments in the locality
		Quality Assurance	Done by NDA	Done by Coca-Cola	Done by Unilever	Done by Abacus and NDA	Done by NDA and Medipharm	To be done by NDA and In-district pharmacies
3	**Procurement of Supplies**	*Source of Supplies*	Multiple sources	Single source	Single source	Single source	Medipharm does not dictate where clients source from	ADS to be encouraged to mostly procure from in-district pharmacies.
		Financing	Most from private saving, but micro-financing was available for those that needed it	Coca-Cola guarantees key distributors financing from banks	Not known	Abacus provides credit to outlets; outlets provide credit to drug shops based on relationship	Provides credit to shops	Encourage drug shops to get microfinancing, and also strengthen relationships with in-district pharmacies to access credit

	Key Performance Areas		Current Drug Shop	Coca-Cola	Unilever	Abacus	Medipharm	Proposed ADS SCMS
4	**Distribution**	*Mode of Delivery*	Public transport	Coca-Cola trucks deliver to key distributors and key distributors, using tricycle and van they own, deliver to retail outlets	Unilever trucks deliver to key distributors and key distributors use their own vans to deliver to retail outlets	Abacus delivers to its outlets using its vans but outsources delivery services to other clients within Kampala	Medipharm delivers to clients using its vans	Encourage drug shops to buy from in-district pharmacies, which will result in larger volumes procured by these pharmacies, hence qualifying for free transport. In-district pharmacies should be encouraged to own a motorcycle for delivery to drug shops.
		Cost of Delivery	Paid for mostly by drug shops	Met by Coca-Cola	Met by Unilever and its distributors	Met by Abacus	Met by Medipharm	Cost to be met by in-district pharmacies or to be cost-shared with the drug shops
5	**Inventory Management**		Not adequately managed, with each drug shop managing its own inventory	Uses enterprise resource planning system to support key distributors	Not Known	Uses enterprise resource planning system to support Abacus wholesale outlets	Medipharm doesn't support inventory management at outlets	In-district pharmacies, in conjunction with association, to support inventory management at drug shops
6	**Financial Management**	*Financial Records*	No emphasis on maintenance of financial records	Coca-Cola requires key distributors to maintain good financial records	Unilever requires key distributors to maintain good financial records	Abacus requires its outlets to maintain good financial records	Not required by Medipharm	Drug shop to be supported to maintain good financial records

7. PROPOSALS FOLLOWING ANALYSES

PSA based the following strategic options on the outcome of the situational and options analyses. Each recommendation was rated for both the amount of expected impact once successfully implemented, and the degree of effort required.

The recommendations are as follows:

- Explore the feasibility of instituting a modified Vendor Managed Inventory program where local pharmacies act as the vendor to monitor inventory of drug shop. (High impact, High effort [HIHE])
- Build the capacity of pharmacies to play the vendor role. This will require them to, among other things: (HIHE)
  - Mentor drug shops regarding inventory management;
  - Acquire an appropriate inventory management tool;
  - Provide drug shops with inventory management support;
  - Acquire a motorcycle for delivery of medicines;
  - Create and manage linkages with drug shops.
- Provide inventory management tools to ADS and training on their use for proper planning and forecasting. (HIHE)
- The NDA should create awareness of the laws for transportation of medicines. (HIHE)
- In districts without pharmacies, encourage well-managed drug shops to take up the role of wholesale pharmacy.
- Revise ADS extended list to meet new demands and regional differences in disease patterns. (HIHE)
- Engage wholesale pharmacies, drug shop associations, district health offices, and local media in supporting community awareness health campaigns to promote ADS activities. (HIHE)

8. ANNEXES

Annex 1. SDSI Partners and Their Activity Objectives

DSI partners and their activity objectives as related to SDSI's goal in Uganda		
Contractor	**Activity Objective**	**Period of Performance**
Pharmaceutical Systems Africa (PSA)	To document the **ADS regulatory system** and experience in Kibaale, explore options for sustainable ADS regulatory system, and recommend a strategy and needed tools to ensure regular inspection, reaccreditation and enforcement of ADS standards.	August–November 2012
Pharmaceutical Society of Uganda (PSU)	To document the experience of **supportive supervision** teams in Kibaale since start of ADS initiative, explore options for sustainable ADS supportive supervision, and recommend a strategy and needed tools that would help ensure delivery of quality pharmaceutical services by ADS providers.	August–November 2012
Makerere University- Kampala Department of Pharmacy (MUK)	To review the current **ADS seller training** initiative and recommend short and long-term solutions that will result in the sustainable availability of trained ADS sellers.	August–November 2012
Avytel Global Systems	To assess and develop a strategy on the feasibility and utility of using **mobile technology** to strengthen ADS services in areas of product availability and quality.	August–October 2012
G1 Logistics Ltd	To develop a **geographic information system (GIS)** strategy for Uganda's National Drug Authority (NDA) in order to improve its regulatory capacity over Accredited Drug Shops.	July–October 2012
Ugandan Health Marketing Group (UHMG)	To determine the status of the **ADS associations** and develop a strategy for facilitating the establishment of ADS associations in Uganda.	May–October 2012
Pharmaceutical Systems Africa (PSA)	To assess the **ADS supply chain** deficiencies and identify possible solutions and recommendations for strengthening the ADS supply chain system.	August–November 2012
Coalition for Health Promotion and Social Development (HEPS Uganda)	To identify current needs, experiences, and expectations of selected consumer populations where ADS have been implemented and to develop strategies for **engaging consumers** in ensuring the quality, appropriateness, and affordability of the services provided in their communities.	May–October 2012
Community Integrated Development Initiatives (CIDI)	To identify and characterize **community-based health initiatives** in Uganda to determine the best options for collaboration between such initiatives and ADS in an effort to improve access to medicines.	September–November 2012

Annex 2. List of Participating Drug Shops

No.	Name of Drug Shop	District	Trading Centre	Name of Person Interviewed	Telephone Number	Date of Assessment
1	YESU AKUGA	KAMULI	BUTANSI	NABIRYESA	0778886477	07/09/2012
2	OSSA	KAMULI		KIRIKYA MWINO	0756116806	08/09/2012
3	MUZEYI GODI	KAMULI	BUDUMBULA			07/09/2012
4	TWINOMUGISHA	KAMULI		MUSASIZI PAUL		08/09/2012
5	TRACY	KAMULI	MBULAMOTI	BABIRYE SLVIVIA		07/09/2012
6	PROTECT	KAMULI	MBULAMUTI	NAISAZA MEBOLA	0789130043	08/09/2012
7	MUWANGUZI	KAMULI	KAMULI T/C	SUSAN	0776556409	07/09/2012
8	FELLOWSHIP	KAMULI	KAMULI T/C	MWEBASA SARAH	0754815926	07/09/2012
9	MAGERO	KAMULI	KAMULI T/C	TUMWESIGE	0753816875	07/09/2012
10	SANYU	KAMULI	KAMULI T/C	MBABAZI PROSSY	0712542571	07/09/2012
11	DEVINE	KAMULI	KAMULI T/C	MUTESI EDITH	0756454045	07/09/2012
12	JOINT	KAMULI	KAMULI T/C	NAJJUKO BETTY	0782677551	07/09/2012
13	FELLOWSHIP	KAMULI	KAMULI T/C	MIREMBE PROSSY		07/09/2012
14	BEKUULA	KAMULI	BULAISI	LEKIKYA MOREEN		07/09/2012
15	QUEENS MARY	KAMWENGE	KAMWENGE T/C	THEODOSIA TUGUMISIZA	0783864944	05/09/2012
16	JK	KAMWENGE	KAMWENGE T/C	JOAN NUWABIINE	0785300731	05/09/2012
17	MUHUMUZA	KAMWENGE	NYARURAMBI	KOBUSINGE EDGAR		05/09/2012
18	COMMUNITY	KAMWENGE	RWENZOZO	NAGASHA BONITA	0781503104	04/09/2012
19	KALUNGI	KAMWENGE	KAMWENGE T/C	OLIVE KARUHANGA	0772355991	05/09/2012
20	ST JUDE	KAMWENGE	KAMWENGE T/C	TUMWEBAZE BEATRICE	0774919297	05/09/2012
21	JOHNS	KAMWENGE	KAMWENGE T/C	BEATRICE NAFUNA	0773108562	05/09/2012
22	KANARA	KAMWENGE	KANARA T/C	KABANYAKA EDITH	0784044137	05/09/2012
23	JB	KAMWENGE	NYARURAMBI	MUZIIME BETTY		05/09/2012
24	RUTOOMA	KAMWENGE	RUTOOMA	ISUKA JULIET	0773172457	05/09/2012
25	MEDCARE	KAMWENGE	RWENJESA	TWINOMUHWEZI AGATHA		05/09/2012
26	AYEBALE	KAMWENGE	KAMWENGE	ELIZABETH KASHAMIRE	0787424849	05/09/2012
27	ST JUDE D/S	KIBAALE	NYAMUTI	FAITH BANYOMIIRI		11/09/2012
28	KAAYI D/S	KIBAALE	KAKUMIRO	MUHINDO FEDRACE	0775706828	07/09/2012
29	AKWATEMPOLA D/S	KIBAALE	KAKUMIRO TC	JOSEPHINE NAMUKYA	0756417447	07/09/2012
30	KAKUMIRO JOINT D/S	KIBAALE	KAKUMIRO T/C	ASIMWE NIGHT	0782866052	07/09/2012
31	MOTHER CARE D/S	KIBAALE	KISENGWE	GORRETTI AYESIGA	0778023556	07/09/2012
32	ST JON D/S	KIBAALE	KIHUMURO	NYAMAWANGA LEONTINE	0773488174	07/09/2012
33	ST CATHELINE D/S	KIBAALE	KISENGWE TC	IMMACULATE KYAKUNZIRE	0783776667	07/09/2012
34	ST MARGRET D/S	KIBAALE	KIHUMURO	ROSE MBAMBU	0781520506	07/09/2012
35	MUGABI D/S	KIBAALE	KAGADI TC	WINIFRED NAKIGUDE	07729602274	08/09/2012
36	THE LORD IS MY	KIBAALE	KAGADI TC	GORETTI KIRABO	0779526746	08/09/2012

No.	Name of Drug Shop	District	Trading Centre	Name of Person Interviewed	Telephone Number	Date of Assessment
	SHEPARD					
37	BETHEL D/S	KIBAALE	ISUNGA TC	OWEGESIGIRE VASTINE	0788746048	07/09/2012
38	ABESIGE MUKAMA D/S	KIBAALE	KAGADI	MARY BASAGULA	0782498460	07/09/2012
39	MPORA MPORA	KIBAALE	KABAALE TC	NAKALYANGO GRACE	0787599851	08/09/2012
40	TINKA AND FAMILY D/S	KIBAALE	KIBAALE TC	SCOVIA,NABWEYA	0784692462	08/09/2012
41	ATTUMUZA D/S	KIBAALE	KARUGUUZA	MIREMBE SCHOLASTIC		07/09/2012
42	ST IMMACULATE	KIBAALE	KITUTU TC	BUSINGE PROSSY	0781033532	07/09/2012
43	OWOMUGISHA D/S	KIBAALE	KITUTU	TUMUSIME GRACE	0772855149	07/09/2012
44	HP MDERN	KIBAALE	KARUGUUTU	TWESIGYE DANIEL	0771498887	07/09/2012
45	BERNA D/S	KIBAALE	KARUNGUZI	GLADYS KALIGONZA	0782677140	07/09/2012
46	MISSION POSSIBLE	KIBAALE	KARUGUZA	NAKATUDE EVE	0785146773	07/09/2012
47	ST ANNA D/S	KIBAALE	NGANGI	BEATRICE KAJUNGU	0787046862	07/09/2012
48	ST MARYS D/S	KIBAALE	KITUTU	KAKEMBO MARY GORRET	0779397731	07/09/2012
49	GOD IS ABLE D/S	KIBAALE	KIBAMBULA TC	NABUGWAWO MWEBASE	0775062125	07/09/2012
50	TOM D/S	KIBAALE	KAMWENGE	MAFABI S LOVISA		05/09/2012
51	HOPE D/S	KIBAALE	BUHUMURIRO	PATRICK KASIGWA	0772087235	04/09/2012
52	ABASA D/S	KIBAALE	KANARA	SCOVIA KATUSABE	0788129060	05/09/2012
53	RIKA D/S	KIBAALE	RWENZEZE	TUSHABOMWE PAULINE	0779500584	05/09/2012
54	GOD WILL	KIBAALE	KARUNGUZU	CHARITY ALIGANYIRA		07/09/2012
55	EXCEL	KYENJOJO	NYAKISI	LUCY NGOZIZA		03/09/2012
56	ST JANE BASOGA	KYENJOJO	KATOOKE	BULETWENDA	0779775018	03/09/2012
57	KAMWE KAMWE	KYENJOJO	KATOOKE	NINSIMA GLORIOUS	0779787620	03/09/2012
58	VICTORIA	KYENJOJO	KATOOKE	VICTORIA BANURA	0702546611	03/09/2012
59	PEACE AND FAMILY	KYENJOJO	RWAMUKORA	KENETH KAUNDA	0787840688	03/09/2012
60	REHEM	KYENJOJO	KATOOKE	AMOS KITOMA	0777351235	03/09/2012
61	ABE	KYENJOJO	KABONGO	AINEBYONA REST	0773174747	04/09/2012
62	ST ANNE	KYENJOJO		ANNET KABABITO	0772073070	04/09/2012
63	ST FRANCIS	KYENJOJO	KAIHURA	ZABALINDA KATUKIRIZA	0778988133	04/09/2012
64	KEMU	KYENJOJO	KATOOKE	JUMBA RICHARD		03/09/2012
65	MWESIGWA	KYENJOJO	RUGOMBE	VIOLET KAMULI	077339727	04/09/2012
66	ST MARYS	KYENJOJO	KYENJOJO	NAMUTOSI JUDITH		04/09/2012
67	GODS WILL	KYENJOJO	GOMBE	ALLEN MAGONA	0702997362	04/09/2012
68	MIREMBE	KYENJOJO	KYENJOJO	KIIZA JANE		04/09/2012
69	MUKUNYU	KYENJOJO	MUKUNYU	KANYUNYUZI STELLA		04/09/2012
70	TUSUBIRA	MITYANA	BUSWA	NANTUME	0784104278	07/09/2012

No.	Name of Drug Shop	District	Trading Centre	Name of Person Interviewed	Telephone Number	Date of Assessment
			BULONGO	CHRISTINE		
71	KAJJOJI HILLTOP	MITYANA	KAJJOJI	NAMPESI FAITH		07/09/2012
72	KIKOMBI	MITYANA	KIKOMBI	MBABAZI MIDRED	0772596499	07/09/2012
73	ST MUGAGA	MITYANA	KIGOGWA	NAMATA LYDIA	0751 827146	07/09/2012
74	JOY	MITYANA	NAMBAALE	MIREMBE JOYCE	0782975115	07/09/2012
75	GOOD HOPE	MITYANA	ZIGOTI	NAKAYIMA FLORENCE	0751801075	07/09/2012
76	BUKOMA	MITYANA	BUKOMA	NALUKWAGO PROSSY		07/09/2012
77	ST JOSEPH	MITYANA	NAKANYENYA TANDA	NAMUYAJA	0772446337	08/09/2012
78	MATENDO	MITYANA	ZIGOTI	NAKIMERA M	0782833742	08/09/2012
79	KAYUNGA DRUG STORE	MITYANA	TOWN COUNCIL	SERUNKUMA MOSES	0752404990	07/09/2012
80	ST JUDE	MITYANA	MITYANA TC	NAKAYI CHRISTINE	0775475649	07/09/2012
81	KIBUUSE	MITYANA	MITYANA	NABAGALA RUTH	0772551998	08/09/2012
82	ONETRE HILL	MITYANA	KIGOGWA	NDAGIRE AGNES	0782655809	08/09/2012
83	ZIRIMENYA	MITYANA	BUSWA BULONGO	NANTEZA HAFUNA		07/09/2012
84	ST ELIZABETH	MITYANA	BUSWA BULONGO	NAKIMULI VENNIE	0776222659	07/09/2012
85	VALLEY DRUG STORE	MITYANA		NAMISANGO AGNES	0775313251	07/09/2012

Annex 3. Survey Tool for Drug Shops

DRUG SHOP SURVEY TOOL

1.0	**Facility particulars**	
1.1	Name of drug shop	
1.2	District	
1.3	Village	
1.4	Name and Phone contact of person interviewed	
1.5	Date of assessment	
1.7	Number of years the shop has been open?	
1.8	Approximate number of clients visiting the shop per day?	
1.9	Approximate number of prescriptions the shop receives per day?	

2.0	Staff positions and roles in the shop				
	Position of persons interviewed:	**Number of years worked in this shop**		**Qualification of shop attendant(cycle the appropriate)**	**Responsibilities in the supply chain(circle the appropriate ones)**
2.1	Seller			Pharmacy technician, Clinical officer, nursing officer, nursing assistant, others specify	Quantify and Forecast, Ordering, Purchase, transport, Dispensing, inventory management.
2.2	Owner			Pharmacy technician, Clinical officer, nursing officer, nursing assistant, others specify	Quantify and Forecast, Ordering, Purchase, transport, Dispensing, inventory management.
	Training in supply chain management				
2.3	In the last one year have you had training in?			Forecasting and quantification Inventory management LMIS Finance management Others specify	

3.0	**Product Selection and Quantification for medical and non-Medical Commodities**		
		YES/NO	**REMARK/EXPLAIN**
3.1	How do you select products you stock?		
3.2	Are there any products that want to stock but you are currently not stocking?		
	If YES which ones? (list five)		
3.3	Why don't you stock them?		
A	No demand		
B	No suppliers		
C	Regulatory restrictions		
D	Financial issues		
E	Lack of expertise to use the product		
3.4	Do your suppliers influence the types of medicines you stock? How?		
3.4.a	If yes how do your suppliers influence the medicines you stock?		
A	Discounts		
B	Promotional materials like shirts, books and pens.		
C	Gifts		
D	Others specify		
4.0	**How do ADS determine order quantities**		
4.1	**What quantification method is being used for medical and non-medical items**		**Interviewer to Paraphrase for the respondent**
A	Morbidity		

B	Consumption		
C	Others specify		
4.2	**Explain how you quantify using the above mentioned method.**		
4.2	**What challenges do experience during quantification of medical and non-medical items? Tick all that apply**		
A	Financial/Availability of funds/cost price of medicines		
B	Consumption/demand		
C	Availability by suppliers		
D	Regulation/policy restrictions		
E	Knowledge about the medicines		
F	Others specify		
5.0	**ORDERING AND ORDER MANAGEMENT OF SUPPLIES**		

		YES/NO	Why?	Cost(the cycle from shop to supplier and back to shop)
5.1	**Where do you get your supplies from? Tick all that apply**			
A	Manufacturers			
B	Kampala wholesalers			
C	District whole sellers			
D	Regional Whole sellers			
E	Retailers			
F	Others specify			
5.1.a	Do you have other ADS /drug shop that you operate? If Yes; do you do joint/pooled procurement when ordering medicines?			

		YES/NO	EXPLAIN/REMARK FOR THE PREFERENCE.	
5.1.b	Have you ever used pooled procurement to purchase medical drugs? Non-medical items?			
G	Explain why you buy from a specific whole seller (BUYER PREFERENCE)?		a. Cheap medicines b. Gives credit c. Is friendly c. Convenience d. others explain	
5.2	**How do you place an order with your supplier Tick all that apply**	**YES/NO**	**EXPLAIN/REMARK FOR THE PREFERENCE.**	
A	SMS			
B	E-mail/Fax			
C	Telephone call			
D	Travelling to supplier			
E	Others explain			
5.3	**How frequent do you re-order your supplies? Tick all that apply**			
A	Daily			
B	Once a week			
C	Twice a week			
D	Once a month			
E	Others explain			
5.4	What determines your ordering frequency?			
A	Cash Flow			
B	Credit facility			
C	lack of storage space,			
D	Others Specify			
5.5	**Describe how you receive products from your suppliers and handle discrepancies?**			

		YES/NO	REMARKS/EXPLAIN
5.6	**How long does it take/lead time from placing an order to receiving from the supplier?**		
A	District whole sellers		
B	Kampala whole sellers		
C	Regional whole seller		
D	Others districts specify		

			REMARKS/EXPLAIN
6.0	**TRANSPORTATION AND LOGISTICS**		
6.1	**How are supplies delivered to your drug shop? Tick all that apply**		**REMARKS/EXPLAIN** **(include the time it takes for the chosen category)**
A	Delivery by supplier		
B	Physically collecting from the supplier		
C	Supplier sending through public transport		
D	Others explain		
6.2	**Which mode of transport do you use for collecting supplies?**		
A	Bicycle		
B	Open lorry		
C	Covered lorry		
D	Motor cycle		
E	Bus/Taxis		
F	Others specify		
6.3	**If the wholesaler delivers to you, do they charge a delivery fee? If so, how much?**		

6.4	**What challenges did you experience in relation to transportation and receiving supplies?**		

7.0	**STORAGE CAPACITY AND INFRASTRUCTURE**			
		Yes	**No**	**Comment**
7.1	Does the facility have adequate storage space			
7.2	Is there evidence of temperature control (Fan ,Air conditioner, ceiling)			
7.3	Are there expired medicines and supplies, do you separate expired from usable stock			
7.4	Are products protected from direct sunlight, humidity?			
7.5	Are the medicines properly arranged			
7.6	Is the order for FEFO arrangement followed			
7.7	Are the shelves clean and tidy			
7.8	Are some medicines under lock and key			

8.0	**LMIS**			
		Yes	**No**	**Remarks**
8.1	Does the shop keep order records			
8.2	Does the shop keep stock records			
8.3	Does the shop have a dispensing register/log			
8.4	Does the shop keep sales records			
8.5	What are your challenges in LMIS? In keeping records			

9.0	**INVENTORY MANAGEMENT**			
		Yes	**No**	**Explain**

9.1	Does your shop experience significant stock losses due			
	Expiry			
	Damage			
	Theft			
	Others			
9.2	In One year how often do you do stock counts?			
9.3	How do you handle excess stock?	Team to probe • Sell out • Return to supplier		
9.4	How do you handle expired medicines?	Team to probe • Burn • Throw • others		

10.0	Management Support			
		Yes	**No**	**Remarks**
10.1	Inspection of the out let in the last one year			
10.2	Support supervision of the outlet in the last one year			
10.3	Availability of job aids/SOPs			
10.4	Availability of reference books like BNF, Uganda clinical guidelines etc.			

Annex 4. Medicines in the ADS Extended List

	DRUG AND DOSSAGE FORMS	YES/ NO	Why (Write number(s) from foot note as appropriate)	COMMENTS
1	**Anti-Asthmatics and Cough Preparations**			
	Aminophylline tablet			
	Salbutamol			
	Non-narcotic coughs preparations (e.g. antitussives, expectorants and herbal)			
2	**Anti-Bacterials/Antibiotics**			
	Amoxicillin capsules/tablets			
	Amoxicillin oral Suspension			
	Cotrimoxazole suspension			
	Doxycycline capsules/tablets			
	Erythromycin tablets			
	Metronidazole tablets			
	Metronidazole suspension			
	Nitrofurantoin tablets			
	Phenoxymethyl penicillin suspension			
	Phenoxymethyl penicillin suspension			
	Ciprofloxacin 250mg & 500mg tablets			
3	**Dermatological products**			
	Silver sulfadiazine cream			
	Iodine tincture 2%			
	Calamine lotion 15%			
	Benzyl benzoate lotion 25%			
	Malathion lotion aqueous 0.5%			
	Hydrocortisone cream			

	DRUG AND DOSSAGE FORMS	YES/ NO	Why (Write number(s) from foot note as appropriate)	COMMENTS
4	**Anti-Helminthics**			
	Mebendazole tablets and suspension			
	Albendazole tablets and suspension			
5	**Anti-Inflammatory/Analgesics**			
	Diclofenac SOD Tablets			
	Ibuprofen tablet 200mg and syrup			
	Acetylsalicylic acid tablets 300mg			
	Paracetamol tablet 500mg and suspension			
6	**Anti-Allergic**			
	Chlorpheniramine tablet 4mg and syrup			
	Promethazine tablet and syrup			
	Cetirizine tablet and syrup			
7	**Anti-Fungal**			
	Nystatin oral suspension/tablets/lozenges			
	Nystatin pessaries			
	Clotrimazole cream			
	Sulphur ointment			
	Benzoic acid+ salicylic acid ointment 6% +3%			
8	**Anti-Malarials**			
	Artemether/Lumefantrine tablet			
	Artesunate/Amodiaquine tablets and other ACTS			
	Quinine table and suspension			
9	**Disinfectants and antiseptics**			
	Cetrimide+chloramphenical solution 0.5% + 0.05%			
	Chlorhexidine gluconate solution 20%			

	DRUG AND DOSSAGE FORMS	YES/ NO	Why (Write number(s) from foot note as appropriate)	COMMENTS
	Hydrogen peroxide solution 6%			
	Calcium or sodium hypochlorite solution 5%			
10	**Oral Contraceptives**			
	Ethinylestradiol + Norethisterone			
11	**Anti-Diarrhoea**			
	Zinc Sulphate tablets			
	ORS			
12	**Anti-Convulsant**			
	Diazepam rectal tube 2mg/ml			
13	**Antidotes**			
	Charcoal activated tablet 250mg			
14	**Ophthalmologic preparations**			
	Chloramphenicol eye ointment 1%			
	Chloramphenicol eye drops 0.5%			
	Tetracycline eye ointment 1% combined antibiotic +steroid eye preparations			
15	**Anti-anaemia medicines, Vitamins and Minerals**			
	Ferrous salts tablet 60mgs			
	Folic acid tablet 60mgs			
	Folic acid tablet 5 mg			
	Ferrous/folic acid			
	Multivitamin tablets and suspensions			
	Vitamin A capsules			

Annex 5. Survey Tool for District Wholesalers

DISTRICT WHOLE SELLER SURVEY TOOL

1.0	Facility particulars			
1.1	Name of facility			
1.2	District			
1.4	Name and Phone contact of person interviewed			
1.5	Date of assessment			
1.6	Number of years the shop has been open?			
1.8	How many staff work in this facility			
2.0	Staff positions and roles in the supply chain			
	Position of persons interviewed:	**Number of years worked in this shop**	**Qualification of shop attendant(cycle the appropriate)**	**Responsibilities in the supply chain(circle the appropriate ones)**
2.1	Seller		Pharmacist. Pharmacy technician, Clinical officer, nursing officer, nursing assistant, others specify	Quantify and Forecast, Ordering, Purchase, transport, Dispensing, inventory management.
2.2	Owner		Pharmacist, Pharmacy technician, Clinical officer, nursing officer, nursing assistant, others specify	Quantify and Forecast, Ordering, Purchase, transport, Dispensing, inventory management.

3.0	Linkage between wholesalers and Drug shops	
3.1	Approximate number of drug shops visiting this whole sale shop per day?	
3.2	How do you promote your business or products to new customers (drug shops)	

3.3	What percentage do drug shops contribute to your business?	<25% 25-50% >75%	Who are the other contributors to business? 1. 2. 3.
3.4	Do you give credit facilities to the drug shops?	Yes No Explain	
3.5	Do you have a dedicated delivery van to your drug shop clients?	Yes No Explain	
3.5.a	If YES, Do you charge an extra cost for delivery		
3.6	What challenges do you experience when trading with the drug shops	a. Financial b. Others describe	

4.0	Product Selection and Quantification for medical and non-Medical Commodities		
4.1	How do Whole sellers determine order quantities		
		YES/NO	REMARK/EXPLAIN
4.2	What quantification method is being used for medical and non-medical items		Interviewer to Paraphrase for the respondent
A	Morbidity		

B	Consumption		
C	Others specify		
4.3	**Explain how you quantify using the**	Consumption	
		Projection quantities	
		Morbidity	
	What challenges do you face with quantification of products?	Equipment/tools	
		Knowledge	
		Data	
		Human resources	
4.4	**What challenges do you experience in quantification of commodities**		
A	Financial		
B	Consumption pattern		
C	Availability by suppliers		
D	Others specify		
4.5	**How do Whole sellers select the products you stock?**		
	Are you familiar with medicines not allowed in drug shops?		
	Do you restrict sale of some medicines to drug shops?		
5.0	**ORDERING AND ORDER MANAGEMENT OF SUPPLIES**		
		YES/NO	**Cost(the cycle from shop to supplier and back to shop)**
5.1	**Where do you get your supplies from? Tick all that apply**		
A	International suppliers		

B	Local suppliers		
C	Others specify		
5.1.a	What is the time taken to receive supplies and challenges with accessing the supplies from?	**Time**	**Challenges**
A	International suppliers		
B	Local suppliers		
C	Others specify		
5.2	**How do drug shops place orders to you? Tick all that apply**	**YES/NO**	**EXPLAIN/REMARK**
A	SMS		
B	E-mail/Fax		
C	Telephone call		
D	Physically bring your order		
E	Others explain		
5.3	How long does it take to process an order for a drug shop?		
A	<h 1hour		
B	1-3 hrs		
C	>3 hrs		
D	Others explain		
	Supplier reliability		
	If orders are received from drug shops are you able to supply all?	**Yes/No**	**Comment/explain**
	What proportion of drug shop orders do you fail to supply fully?		
	How do you handle discrepancies of orders you supplied to drug shops? Is it common?		

6.0	TRANSPORTATION AND LOGISTICS		
6.1	**How are your supplies delivered to your whole sale shop? Tick all that apply**		**REMARKS/EXPLAIN** **(include the time it takes for the chosen category)**
A	Delivery by supplier		
B	Physically collecting from the supplier		
C	Supplier sending through public transport		
D	Others explain		
6.2	**Does this facility have a dedicated delivery truck?**	**YES/NO**	
	Ability to deliver the commodities and who pays for the transport? Describe		

7.0	IS		
		s	marks
	Does the shop keep order records		
	Does the shop keep stock records		
	Does the shop keep sales records		
	Do you have electronic LMIS?		
	What are your challenges in LMIS? In keeping records		

8.0	INVENTORY MANAGEMNT			
		Yes	No	Explain
8.1	Does your shop experience significant stock losses due			
	Expiry			
	Damage			

	Theft	
	Others	
8.2	In One year how often do you do stock counts?	

Annex 6. Key Informant Interview Guides

Drug Shop Supply Chain assessment

Stakeholder; M o H

We are conducting ADS/drug shop supply chain assessment regarding ADS supply chain in the private sector. We are visiting mainly private drug shops in the districts of Kibaale, Kyenjojo, Mityana, Kamwenge and Kamuli.

Specifically the objectives of the survey are;

1. Document best practices that have or will have supported ADS supply chain programming success in Uganda districts
2. Document past and current bottlenecks in ADS supply chain implementation and propose strategies that can be used to address them
3. Draw lessons learned from Uganda ADS supply chain experiences that can inform the design of future scale up of ADS programs
4. Document any existing evidence of ADS supply chain effectiveness
5. Determine the strengths and weaknesses of the existing ADS supply chain approach

We would be grateful for any information you can share with us on the following:

A. Range of medicines—policy backing the range of products among ADS?

B. Has the ADS helped improve access to medicines? If yes are there plans/policies to back up?

C. How can government facilitate access to medicines in less served areas?

D. To what extent is PPP improving access through drug shops in Uganda?

E. Findings of the pilot found that most of the ADS are managed by nursing assistant yet the act recommends a minimum of a nurse or a licensed person. How is the ministry reconciling reality and the policy provisions on human resource for drugs?

F. What are the supply chain challenges the private pharmaceutical sector is experiencing?

G. What can be done to address these challenges?

H. What promising new methods and strategies do you propose to strengthen the M&E system? (Please describe the use of SMS for both client and drug supply recording and reporting?

Thank you for your time.

Drug Shop Supply Chain assessment

Stakeholder; N D A

We are conducting ADS/drug shop supply chain assessment regarding ADS supply chain in the private sector. We are visiting mainly private drug shops in the districts of Kibaale, Kyenjojo, Mityana, Kamwenge and Kamuli.

Specifically the objectives of the survey are;

1. Document best practices that have or will have supported ADS supply chain programming success in Uganda districts

2. Document past and current bottlenecks in ADS supply chain implementation and propose strategies that can be used to address them

3. Draw lessons learned from Uganda ADS supply chain experiences that can inform the design of future scale up of ADS programs

4. Document any existing evidence of ADS supply chain effectiveness

5. Determine the strengths and weaknesses of the existing ADS supply chain approach

We would be grateful for any information you can share with us on the following:

A. Range of medicines—policy backing the range of products among ADS?

B. Has the ads helped improve access to medicines? If yes are there plans/policies to back up?

C. Findings of the pilot found that most of the ADS are managed by nursing assistant yet the act recommends a minimum of a nurse or a licensed person. How is the ministry reconciling reality and the policy provisions on human resource for drugs?

D. Describe the challenges shops face with meeting the set standards of premises for medicine handling?

E. What promising new methods and strategies do you propose to strengthen the M&E system? (Please describe the use of SMS for both client and drug supply recording and reporting?

F. What challenges do you face with regulating the supply of medicines in Uganda?

Thank you for your time.

Drug Shop Supply Chain assessment

Stakeholder; DHT/DHO/DADI

We are conducting ADS/drug shop supply chain assessment regarding ADS supply chain in the private sector. We are visiting mainly private drug shops in the districts of Kibaale, Kyenjojo, Mityana, Kamwenge and Kamuli.

Specifically the objectives of the survey are;

1. Document best practices that have or will have supported ADS supply chain programming success in Uganda districts
2. Document past and current bottlenecks in ADS supply chain implementation and propose strategies that can be used to address them
3. Draw lessons learned from Uganda ADS supply chain experiences that can inform the design of future scale up of ADS programs
4. Document any existing evidence of ADS supply chain effectiveness
5. Determine the strengths and weaknesses of the existing ADS supply chain approach

We would be grateful for any information you can share with us on the following:

A. How many drug shops are in this district?

B. How many wholesalers/pharmacies are in this district?

C. Range of medicines—policy backing the range of products among ADS?

D. Has the ads helped improve access to medicines? If yes are there plans/policies to back up?

E. How can government facilitate access to medicines in less served areas?

F. To what extent is PPP improving access through drug shops in Uganda?

G. Findings of the pilot found that most of the ADS are managed by nursing assistant yet the act recommends a minimum of a nurse or a licensed person. How is the ministry reconciling reality and the policy provisions on human resource for drugs?

H. What are the supply chain challenges the private pharmaceutical sector is experiencing?

I. What can be done to address these challenges?

J. What promising new methods and strategies do you propose to strengthen the M&E system? (Please describe the use of SMS for both client and drug supply recording and reporting?)

Thank you for your time.

Drug Shop Supply Chain assessment

Stakeholder; Drug shop association

We are conducting ADS/drug shop supply chain assessment regarding ADS supply chain in the private sector. We are visiting mainly private drug shops in the districts of Kibaale, Kyenjojo, Mityana, Kamwenge and Kamuli.

Specifically the objectives of the survey are;

1. Document best practices that have or will have supported ADS supply chain programming success in Uganda districts

2. Document past and current bottlenecks in ADS supply chain implementation and propose strategies that can be used to address them

3. Draw lessons learned from Uganda ADS supply chain experiences that can inform the design of future scale up of ADS programs

4. Document any existing evidence of ADS supply chain effectiveness

5. Determine the strengths and weaknesses of the existing ADS supply chain approach

We would be grateful for any information you can share with us on the following:

A. What is your view on the methods of transporting medicines around this district?

B. What challenges do your members experience with;
   o Selection of medicines
   o Quantification and forecasting
   o Transporting
   o Storage
   o Dispensing
   o LMIS.

C. How could these be overcome?

Thank you for your time.

Drug Shop Supply Chain assessment

Stakeholder; Central whole sellers (Abacus, Medipharm)

We are conducting ADS/drug shop supply chain assessment regarding ADS supply chain in the private sector. We are visiting mainly private drug shops in the districts of Kibaale, Kyenjojo, Mityana, Kamwenge and Kamuli.

Specifically the objectives of the survey are;

1. Document best practices that have or will have supported ADS supply chain programming success in Uganda districts

2. Document past and current bottlenecks in ADS supply chain implementation and propose strategies that can be used to address them

3. Draw lessons learned from Uganda ADS supply chain experiences that can inform the design of future scale up of ADS programs

4. Document any existing evidence of ADS supply chain effectiveness

5. Determine the strengths and weaknesses of the existing ADS supply chain approach

We would be grateful for any information you can share with us on the following:

A. Give a detailed description of your supply chain and point out any challenges you meet.
   o Selection of medicines
   o Quantification and forecasting
   o Transporting
   o Storage
   o Dispensing
   o LMIS.

D. You have branches in several up-country towns. Several companies have failed to stay up-country. What made you start up-county? How successful are the up-country stations? What is your approach to up-country business?

E. Can SMS or electronic systems improve reporting among drug shops?

F. What are the challenges with distribution of commodities?

Thank you for your time.

Drug Shop Supply Chain assessment

Stakeholder; Distributors (Unilever and Coca Cola)

We are conducting ADS/drug shop supply chain assessment regarding ADS supply chain in the private sector. We are visiting mainly private drug shops in the districts of Kibaale, Kyenjojo, Mityana, Kamwenge and Kamuli.

Specifically the objectives of the survey are;

1. Document best practices that have or will have supported ADS supply chain programming success in Uganda districts

2. Document past and current bottlenecks in ADS supply chain implementation and propose strategies that can be used to address them

3. Draw lessons learned from Uganda ADS supply chain experiences that can inform the design of future scale up of ADS programs

4. Document any existing evidence of ADS supply chain effectiveness

5. Determine the strengths and weaknesses of the existing ADS supply chain approach

We would be grateful for any information you can share with us on the following:

A. Give a detailed description of your supply chain and point out any challenges you meet.

   o Promotion/demand creation.

   o Quantification and forecasting

   o Distribution

   o Storage

   o Retailing

   o LMIS.

B. Coca Cola/Unilever has been known to avail your products to the most remote places. How have you managed to do this?

C. Can some of the essential health products be distributed?

D. Challenges with the supply chain.

Thank you for your time.