UNIVERSITY OF NAIROBI

SCHOOL OF COMPUTING AND INFORMATICS

FRAMEWORK FOR ICT IN RESOURCE DISTRIBUTION: CASE OF RELIEF FOOD MANAGEMENT

BY:
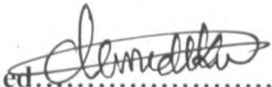
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DECLARATION

This Research Project is my original work and has not been submitted for a degree in any other University award.

Signed..

Date...27/07/2012.................................

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This research project has been submitted for examination as part of fulfillment for the masters degree in information system with my approval as the University Supervisor.

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Dedication

This project is dedicated to my wife Janet, who took a lot of her time in running the house while I was handling the project. She also made sure that I had a comfortable time during the studies. It is also dedicated to my daughters, Lilian Atieno and Violet Adhiambo and my son Martin Odeka. They dedicated their time and offered humble payers to see me through this research.

LIST OF ABRIVIATIONS

D. C	District Commissioner
D.O	District Officer
NCPB	National Cereals and Produce Board
ASAL	Arid and Semi Arid Land
Bk	*Book*
LSO	Local Supply Order
LPO	Local Purchase Order
A.I.E	Authority to Incur Expenditure
MOSSP	Ministry of State for Special Programmes
WFP	World Food Program
DMIC	Disaster Mitigation Information Centre
ICT	Information Communication Technology
EMOP	Emergency Response Operation Programe
NDP	National Disaster Policy
WFPIFA	World Food Programe Information for Food Assistance

ABSTRACT

The process of resource distribution to vulnerable population in Kenya has been posing a great challenge to the country. Over time, a great concern has been on the capability of the process in addressing the issues of accountability and equitability in the distribution. This study carried out a research in the process and identified gaps and challenges which it addressed by developing a suitable and appropriate ICT based framework for the distribution. It categorized the main objective into three specific ones whose aims were: mapping out resource distribution process and identifying factors that affect the process, developing a framework for the resource distribution process using Ministry of State for Special Programemes relief distribution as a case study and finally designing a prototype system based on the framework which addresses the gaps and challenges found out.

To achieve the set objective, the study covered an extensive literature review of various framework of resource distribution carried out by several organiastions, both globally and locally for benchmarking. Although most of these framework studied were found to be meeting our requirement partially, the study found World Food Programme framework (WFPF:2011) which is applied locally in Kenya as most appropriate and was therefore adopted with some modifications for the research. Other various frameworks in stud presented very valid components which were borrowed to suit several areas in the study as presented in the table of result and implementation (TRI).

The study applied a qualitative method approach where resource distribution data and documents obtained from MOSSP were used to conduct the research through a desk review and face to face interview with stakeholders involved in process. During system analysis, the framework used by MSSOP for food distribution was chosen for the study due to its wide coverage that goes to all parts of Kenya and its regular distribution nature which is done on monthly basis. All the stages of food distribution process were considered during the review but the actual prototype development narrowed down to main modules in the process namely resource allocation, dispatch, transportation and delivery to districts.

The analysis of the process of MSSOP showed that it was faced with a number of gaps and challenges key among them: lack of mechanism to reconcile the quantities of commodity during its processing and

movement at various stages, lack of information sharing with the public about the resource distribution and lack of criteria based method to effect equitable distribution of resources to beneficiaries.

To effectively address the challenges, the study came up with a framework that mapped out the resource distribution process in all its stages. Using this framework, the study designed a prototype system which addressed the gaps and challenges. The study also converted the system which was earlier developed using combination of access and visual basic to a web based in order to address the challenge of information sharing. Another module was also developed in the system where resource allocation is calculated using predefined parameters to address the issue of non-equitable distribution.

The implementation of this study has solved major challenges in resource distribution by providing a mechanism of tracking quantities of commodities allocated, dispatched, transported and delivered to various destinations. By using the system, it is possible to track every quantity of commodity from its point of allocation to delivery and hence enhance accountability. The study has also set adequate ground for future work in order to improve on the process.

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CHAPTER ONE: INTRODUCTION

1.1 Background

Application of ICT in the distribution of resource plays a critical role in determining how va organizations achieve their goals when there is a need (Peter I. Macreadie: 2009). For the last dec the government of Kenya distributes resources to beneficiaries affected by disasters such as fai floods, fire, accident, landmine and landslides among others (National Disaster policy: 2005). ! parts of the country such North Eastern province gets resource distribution regularly on a monthly while other parts get the resource only when there is a need. The resource items which are distribut victims include food and non-food items. The food items include Maize, rice, beans, vegetable oi sugar while non-food items issued include blankets, tents, tarpaulin and cooking utensils among ((Relief allocation schedule:2012).

This research studied the current resource distribution in Kenya and indentified gaps and chall involved in the process and developed mechanisms framework which was later supported by prot system to address the challenges. The study involved four stages in resource distribution process ni allocation, dispatches, transportation and delivery at destination point. It also considere(commodities which are often distributed freely to vulnerable population including food and noi items.

According to National Disaster policy (NDP:2005), a disaster is a serious disruption of the funct of a community or society causing widespread human, material, economic or environmental loses exceed the ability of the affected community/society to cope using its own resources. A disa situation resulting from an environmental phenomenon or armed conflict that produced stress, pe injury, physical damage and economic disruption of great magnitude(Frederick C. Cuny : 1944-1⁹

Apart from providing resources to disaster victims, Kenya carries out a regular distribution of res in 17 of its districts classified as arid and semi arid lands. The districts have a total needy popula 1.4. Million, which is expected to increase due failure in crop yields (EMOP operation, 2012

places a lot of burden on the government and which therefore requires a tool such as ICT application to assist in the management of the resources.

As a result of massive distribution of resources to needy population, Kenya's meager resources which could have been used in other areas are diverted in fighting disasters (Disaster Policy, 2005). However, the effort of resource distribution is yet to be felt on the ground since it is on record that the people who benefit from relief items are not always the victims of disasters nor are they the needy population in arid and semi arid districts. According to ASAL Policy (: 2011), resource provision, especially food issued to vulnerable families, affects life of human beings directly and therefore deserves attention. About 8 million people i.e. about 26% of the country population are affected by famine every year. This is due to the fact that 80% of the country land mass is arid and semi arid land, leading to famine. Despite massive global food production and supplies in the past decades, sufficient to feed the world's current population, there is still an estimated 20 percent of people in developing countries, (more than 800 million), who lack access to enough food on a regular and predictable basis" (wvifood.org:2010).

It is a matter of priority for every country to address the issue of disaster due to its adverse effect on human being if left to persist. In Kenya the impact of disaster has caused a number of effects with many million Kenyans having their livelihoods disrupted and the country development retarded (NDP: 2005). An ICT solution can be the ideal tool for coordination of resource supply, especially disaster mitigation. An electronic organization registry can help immensely and effectively in tracking who is doing what, where, when and, more importantly, whether there are areas in which services are not adequate (Tsunami and Earthquake:2004-2005). Thus the mitigation process in resource distribution calls for rapid response when disaster occurs. With the above background, it is of essence that the government embrace the use of ICT to effectively deliver the resource distribution mechanisms.

1.2   Problem of the statement:

For a number of decades, Kenya distributes resources to vulnerable population every year. Some of the resources especially donations are channeled directly to already identify districts of destination while others are channeled through a normal distribution channel where the government is the main distributo to beneficiaries. However, it has been observed that there are .Variances between the quantity o resources issued to assist the victims and the actual quantity that 'reaches them. In many occasions

resource allocated to victims has been discovered to be transported to unknown places for sale or sold in open market places. The question that this research attempts to address is whether this resource is being managed well in away that can enable it serve its purposes and whether adequate mechanism is put in place to ensure accountability in the process. In this aspect, the study undertook to study the current framework for the operation of resource distribution in Kenya and other frameworks which are applied in resource distribution by other organizations in order to establish best practice for the proposed system.

1.3   Objectives

MAIN OBJECTIVE

The main objective of this research is to identify gaps and challenges in Current Resource Distribution process in Kenya with a view to coming up with a suitable ICT based framework to address them. The specific objectives to be addressed are:

- To map out current resource distribution process in Kenya in order to identify factors that affects the distribution.
- To develop a framework for the resource distribution process using the distribution of relief food as a case study.
- To design prototype system based on the framework to address the gaps and challenges in the distribution process.

1.4   Problem Justification

The resource distribution in Kenya is critical in sustaining lives of many people affected by disasters and those who are not able to access adequate food due to poor returns from the agricultural produce. Both the government and donors put in huge funds to ensure that adequate resources are mobilized, safely transported and finally distributed to beneficiaries as needed and planned. It is prudent that this process is given high priority interns of its management to ensure that it servers its purpose in the best and appreciated manner. The efficient management will make the country safer in life saving and must have in consideration a number of parameters including accountability and faire distribution to beneficiaries. The following are some of the core reasons why this research is appropriate:

Stakeholders involved in funding of this process need adequate data and clear information to enable them plan, budget and monitor the process for efficiency and accountability.

- This framework provides adequate structured system to stakeholders enabling them to follow process of the resource distribution and therefore restore their confidence in the government which th entrust with resource distribution.

- The research is able to have structured resource distribution available for them to add innovation on t process in order to make it more robust and efficient and therefore alleviate many victims fr suffering.

- The public see this distribution process being more transparent since most of their concern includ information about allocation and subsequent delivery of resources to their areas, quantity of resour allocated and delivered and the people to benefit from the resource distribution will be addressed posting the information to the website for their access.

SCOPE

The research is limited to study resource distribution which is effected by the MSSOP specifically for food items, sources, resource dispatch and delivery at the distribution centers especially DC's offices o district headquarters.

LIMITATION OF THE STUDY

Due to lack of resources and clear methodology used beyond the point of resource distribution, the stu could not implement procedures required to identify the right beneficiaries of resources at the grass ro level and

procurement process of commodity and subsequent storage of the same before allocation. The study limited to allocation, dispatch and delivery of commodity at destinations.

Chapter 1: discusses background, the objectives, justification and scope of the project. Chapter 2 discusses literature review, looking at similar systems and modules /frameworks in use and present the conceptual framework for the research. Chapter 3 presents the research methodology which includ analysis and design of the prototype system. Chapter 4 presents the results, analysis and discussion of the research of the research including the sample reports from the system. Chapter 5 discussed the results in light of the objectives and presents the conclusion and recommendations for the future work.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The objective of the research was to carry out a study in the current process of resource distribution, identify gaps and challenges, design a framework for the proposed resource distribution process and develop appropriate ICT prototype system to address the challenges. According to H. Donald Ratliff: (1996), Resource distribution and logistics is the collection of activities associated with acquiring, moving, storing and delivering supply chain commodities and information in all stages and encompasses functions of transportation, distribution and warehousing. This research basically models free resource distribution in Kenya in order to make it more responsive and useful to the vulnerable population whom it serves. Success and failure of ICT interventions in development depends on how national governments, national and international development agencies, non-governmental organisations and public agencies conceptualise ICT and apply it in their operations (Sein and Harindranath, 2004). The conceptualization of ICT by an organization in its successful development of any nature remains a key in resource distribution process. Adaption of appropriate ICT platform to harness the process has remained a key challenge with most national governments and if addressed, will ensure high standard of delivery. According to UNESCO (2006), the term information communication technologies (ICT) refers to technologies that are used to transmit, store, create, share or exchange information.

Kenya has placed specific responsibility of disaster response and mitigation with Ministry of State for Special programmes in its effort to fight disasters. This Ministry mobilizes resources and distributes them to disaster victims. Other Ministries involved in disaster reduction campaign, especially establishment of early warning system and preparedness include Agriculture, Finance and Northern Kenya.

Information obtained from the concerned Ministry shows that a total of Kshs 1.085 billion was allocated to disaster mitigation and response during the current financial year 2012/2013 (GOK Printed Estimate :2012). Out of the above allocation, Kshs 1 billion is for relief food items while kshs o.85 is for non food items and disaster response Despite huge budgetary allocation, it is in record that the vulnerable populations who are meant to benefit from resource distribution fail to get it at all or get inadequate

resource than what they are entitled to. It is further in record that a number of people, especially those from North Eastern, have been experiencing massive suffering due to famine. In this area, children are reported to be affected by malnutrition, adults become emaciated and therefore too weak to recover from famine demise, forcing them to divert to eating wild fruits. Some people have also been pictured in a pathetic famine situation where they are almost giving up life.

In many instances, government resources meant to benefit victims are found to be sold in open market, stolen by those entrusted with them or diverted to other unconfirmed destinations. The above issues raise question about the management of the resource during its distribution. The critical question that one would ask is whether the Kenya government has adequate mechanism in the resource distribution process to guarantee efficiency and accountability.

Further assessment of resource distribution operation shows that the system is till manual within the government Ministry. This obviously makes it difficult to link the processes involved in the resource distribution in order to establish whether the system is efficient and accountable.

According to Drucker (1988), ICT and networking will be the key to organizational coordination. He adds that the direct impact upon logistics management of organizations is pegged to successful implementation of ICT concept. The Drucker statement comes handy in delivering resource distribution especially in a government organization where the distribution is done freely in order to sustain lives of vulnerable population and therefore need a greater height of monitoring.

Quality management in distribution of resource is a combination of information management and process management (Stadler & kilger, 2003). In their paper on ICT, Hamilton and Shevany(1981), highly recommended use of ICT as an integral part of management control process . They further argue that one of the primary objectives of ICT is to develop and operate information systems that will enhance the organization's ability to accomplish its objectives. It is in the view of this research that Kenya can reduce the   impact of disaster to a controllable level if the resources released towards fighting it are well coordinated. Use of an appropriate ICT framework, with implementation of structured framework would be a key to addressing the challenges experienced in the process.

The organizations which are involved massively in resource distribution, both globally and in Kenya were identified and their modes of operation discussed.

2.2   Organizations applying ICT in Resource Distributing Globally:

2.2.1 Disaster Management Information Centre (DMIC: 2005-2009) of Bangladesh

Disaster Management Information Centre (DMIC) was established in Bangladesh to operate during emergency period with capability to monitor report and coordinate on emerging events like Cyclone, Flood and Tsunami among others. It was installed with appropriate ICT equipment to serve 235 high-risk hazard areas in 64 districts headquarters. The main components considered in the model include:

- **Preparedness** – whose objective is to provide early warning in order to set necessary equipment for fighting disasters.
- **Mitigation measures** – whose objective is to provide procedures to be followed before and after disaster including resource mobilization and distribution to disaster victims and
- **Response measures** - whose objective is to address actions to be taken during and immediately after an event.

The model uses ICT /satellite to provide reliable rapid communication and observation of positioned tools and resources required during and after the disaster occurrence. Once a disaster occurs, information is rapidly remitted from the DMIC centre to all stations as shown in the model presented below. Another active component considered is the area of risk assessment and reduction which is supported majorly from ICT based data.

Advantage of DMIC:

This model has a lot of components which makes it very useful in the application for ICT for resource distribution. Its structure is able to map out all forms of disasters irrespective of their kinds. It has a definite plan of Reponses from national to the ground in order to reach and pass information and distribute required resources to affected victims. It uses satellite which is very powerful and globally positioned to relay information rapidly to the public. The key components relevant for the proposed system are:

Disaster Preparedness, mitigation and response – This sets equipment and resources ready for any disaster that may occur. If the component is built into the system, it will be able to assist in deciding the type of resources to be prepared, what equipment to set ready and what mitigation measure is required. It also ensures fair distribution of resources since there is adequate time.

- Beneficiary identification scheme – the model uses a number of methods to identify beneficiaries. Among them are biometric data, smartcard, fingerprints and ration and voucher.
- Ability to be adopted in various countries and regions: - the model has been extensively used in various countries and regions among them India, Pakistan, United Nations Commissioner for Refugees (UNHCR) offices i.e Tanzania and Kenya and Syrian Arab Republic. Methods of beneficiary identification are varied according to country of use.
- Satellite for data transmission - The model uses satellite in data transmission which is very reliable but too expensive.
- Structure of the model for resource distribution – From the structure of the model, resource distribution is generated from one point to all points. Thus distribution is not structured in hierarchical model but from National to all distribution points.

Difference between DMIC and the proposed model for resource distribution:

- **Use of biometric in beneficiary identification** – The biometric identification is one of the most accurate identification method but very expensive to set up. However, use of voucher for data identification is a simple model that can be applied in the proposed model.

- **Satellite data transmission** – the proposed model uses fibre optics for data transmission as opposed to satellite. The satellite is expensive and may not be as reliable.

- **Resource distribution Structure** – the model rolls resources from national to all distribution points. This is different from the proposed model where the distribution is from national to county and from county to division, location and sub-location.

Conceptual framework for DMIC – of Bangladesh to monitor disaster
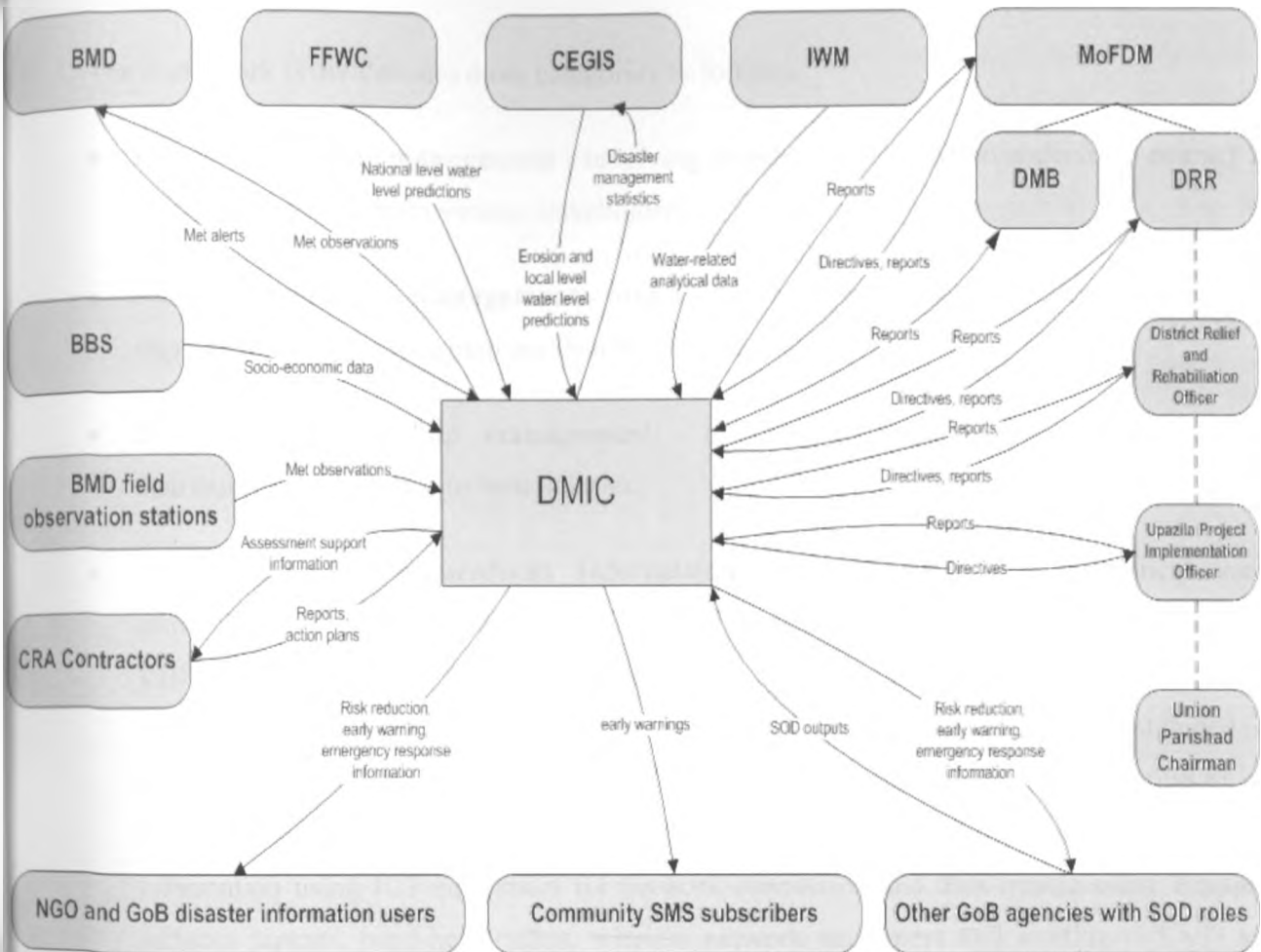
Source: Research

Figure 2-1 Conceptual framework for DMIC – of Bangladesh to monitor disaster

2.2.2 WFP Application for food assistance framework (WFPIFA: 2010):

Use of ICT in resource assistance especially food, is widely applied by WFP operations globally. A clear description of this operation is extracted from World Food Program Information for Food Assistance (WFPIFA:2010): which is a framework that WFP applies globally on-resource distribution. In this framework, approaches to various trends in the use of technology to support mobilization and delivery

of food assistance to beneficiaries are examined. A framework representing this process is described below in *figure 2:*

The framework is divided into three categories as follows:

- **Donor relationship management** - involving working with donors to understand country needs and mobilize resources from various stakeholders.

- **Partner relationship management** - involving working at the country-level with governments and implementing partners to map out distribution plan.

- **Beneficiary relationship management** - referring to partners' processes in managing the distribution of assistance to beneficiaries.

- **The Emergency Preparedness Information Centre** *(EPIC):* this component uses mobile computing and other wireless communication garget such as wireless connectivity provided via VHF, WiMax, WiFi and cellular technologies, where they exist. EPIC allows for the streamlining of commodity hand-over and tracking processes through the use of location-stamped electronic waybills to authenticate proofs of delivery and facilitates monitoring and evaluation by supporting household surveys. Through Emergency response personnel, EPIC Disseminates and Transmits Information using ICT equipment for network connection and data transmission. Equipment used includes laptops, hand-held radios, wireless network equipment and satellite (VSAT) terminal to connect the office to global networks.

Strength and weakness of WFPIFAF: 2010 framework

The model uses high level of ICT equipment to relay information in a short time. It uses wireless communication and other relevant equipment which transmit information rapidly to the public and to victims. It also uses biometric technology to identify benefactress in various parts of the country. This requires good training skills and deployment of high level equipment. The model has got a well structured framework that coordinates humanitarian support from the mobilisation to distribution. However, there is a weakness in relation to use of Biometrics by United Nations agencies such as UNHCR as pointed by the framework. Although the usage has led to increased accuracy in beneficiary enumeration, important challenges including Policies on data protection issues,

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especially for cross-border still remains to be addressed. The biometric information should be used only to its intended purpose. The Technology also needs to ensure that accuracy is high, and that the identification mechanism is culturally acceptable to the beneficiary population. Difference between WFPIFAF:2010 and the proposed framework for Kenya is that WFPIFAF:2010 uses satellite which is expensive for Kenyan case. The equipment used including, biometric technology to identify benefactress in various parts of the country are more expensive to implement. However, the Kenyan model will borrow a lot on the concept of identifying beneficiaries through voucher. Both model work on principal in the sense that there is a section of resource mobilisation, resource ware housing and finally distribution which can be borrowed to support the Kenyan case.
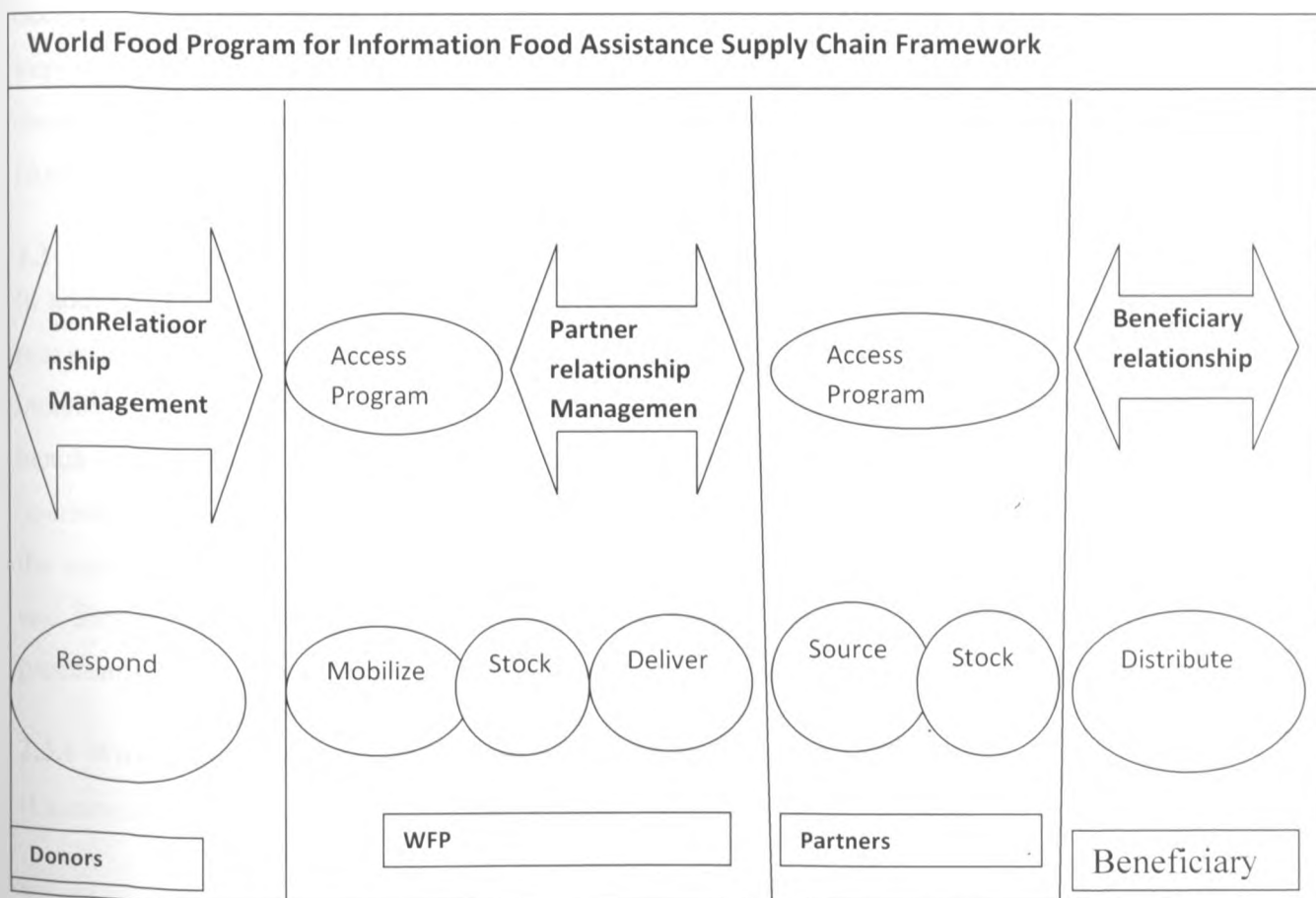
Source: WFPIFAF: 2010

Figure 2-2 ICT Application for food assistance framework (WFPIFA: 2010):

2.2.3   United Nations Asian and Pacific Training Centre for ICT development (UNAPCICT: 2010)

Another framework which was discussed in this project is a framework presented by the United Nations Asian and Pacific Training Centre for Information and Communication Technology for Development (UN-APCICT) on Disaster. The framework applies ICT to provide an overview of trends, practices and lessons learnt before and after disaster, (UN-APCICT: 2010). It also presents a useful resource for compiling and disseminating best practices in ICT for development which on the other hand forms a source of reference of a range of stakeholders including government agencies, international organizations, academia, non-governmental entities and private sector. This was used for resource compilation and dissemination for ICT best practices for development and during the disaster that occurred in *Indian Ocean Tsunami and* **Haiti Earthquake. The case studies also** examines the important role ICTs in disaster preparedness, response and mitigation, and share the lessons learned by those disaster management practitioners who have deployed ICT in response to disasters in countries like Bangladesh, China, Sri Lanka, and Haiti

2.3   Organization applying ICT in resource distribution locally in Kenya:

In addition to considering those organizations that apply ICT in food distribution process globally, the researcher visited headquarters of those organizations which are also involved in the same in Kenya, including World food program, World Vision and Red-cross of Kenya. The objective of this was to bench mark on how the organizations use ICT to process food distribution in their own respective operations. It was also to find out what model the organizations apply in this concept. During the visit, the researcher was given an explanation of how these organizations apply the ICT concept at National and districts in disbursing food. Each organization also demonstrated their software in regards to food processing. The following were the findings on the ground about different organizations visited:

2.3.1 World Food Program -ICT application in Kenya using COMPAS

(Commodity Movement Processing and Analysis System- WFP: COMPAS):

World food Program notes that with the advent of the Internet and the World Wide Web, cheaper means of information acquisition, dissemination and exchange are becoming available and are improving food distribution networks (www.wfp.org). On the analysis of its food distribution software, it was realized that world food program has Oracle database food distribution software which is applied globally but

has a component for resource distribution in Kenya. The software is in two components which are not integrated.

One strong component of this framework has fitted all vehicles ferrying resources for distribution with vehicle tracking device enabling the vehicles to be monitored from the point of its take off to destination. This ensures that the content of the commodity, the people in the vehicle and the vehicle itself are safe.

The first component is called COMPAS (Commodity Movement Processing and Analysis System). This monitors food distribution at any point along its supply chain from warehouses, to trucks, to distribution centers. It gives relief workers an accurate, up-to-date snapshot of its food stocks. All food shipment data is sent from the field to Rome, where it is updated in the software. The data can then be accessed by people in-countries.

The second software component is called **SAP** (Supply Application Program). This tracks food being shipped from donor countries, such as U.S. It monitors the quantity of food being shipped up to destination. It also tracks donations on which the agency is totally dependent. Contributions from donors around the world are recorded in the R/3 system and matched against distribution data from Compas. By this, full accounting of donations and disbursements is achieved.

Once food lands in the distribution points i.e district, division, location and sub-location by Kenya administrative structure, the organization uses mainly e-mail to remit back data captured using laptops to the headquarter for analysis.

All people who qualify for food distribution are identified and are issued with ration card as a form of identity. The cared contains the details of the beneficiary including name, ID number of ration entitlement.

Framework of food distribution by World Food Program using COMPAS system

Source of food

Source of food

Source of food

WFP HQ Office in Kenya

Data Warehousing

WFP OFFICES IN KENYA

Waybills and delivery notes

Waybills and Delivery notes

District

Waybill and Delivery Notes

Waybill and Delivery notes

Distribution Centre

Distribution Centre

Distribution Centre

Source: WFPF: 2011 COMPAS

Figure 2- 3 : Framework of food distribution framework by World Food Program

Comparison between WFP 2011 COMPAS and the required resource distribution framework:

- **Source of Resource for distribution**: while the WFP 2011 COMPAS distributes majorly the resource issued to them by donors, the proposed system for Kenya case distributes majorly the resource which the government purchases. Thus the procurement and delivery elements are additional models that should be added to the one of WFP.

- **Wide Area Network connectivity**: While the WFP: 2011 COMPAS uses satellite to monitor its resource distribution, the one for Kenya uses fiber optics since the satellite facility is expensive and unreliable.

- **Accounting system**: While the WFP 2011 COMPAS uses metric tones as its basic unit of accounting for commodity, the model considered for Kenya uses combination based on number of bags and metric tones for accounting for quantity of commodity.

- **Business Plan**: In addition to the above, the business plan requirement for Kenya model fits a financial year based on June to July as opposed to that of WFP 2011 COMPAS which uses calendar year.

- **Storage of commodity to be distributed:** The WFP 2011 COMPAS does not have stores at district levels. Once commodity is dispatched from headquarter, it goes direct to the distribution centers. The model for Kenya case uses stores at both National and district levels. At the district stores, commodity is dispatched from National and is stored before being distributed to beneficiaries.

- **Operational Level**: while in Kenya, WFP 2011 COMPAS operates as lead agent in the process of resource distribution i.e Kenya Government issues out its commodity to World Food Programe which distributes it to beneficiaries. The Kenya government is involved in the process of acquiring this commodity. This concept changes the design model requirement for the project.

A conceptual framework for food distribution in process in Kenya is presented in figure 5. From this framework, model for this project begins at the food source through allocation level up to the point of delivery at the district level as presented in the figure 5):

2.3.2 World Vision (WVi: 2010)

World vision acts as food distribution agent to the Kenya government. It also distributes food which it sources out by itself to victims of famine and draught. It operates in various districts in Kenya where draught occurs. Before occurrence of serious draught, it provides food to children through school feeding programs. The organiasation sources for food from the government, donors or volunteers which it ferries direct to disaster victims for distribution using their fleet of vehicles or government vehicles. They rarely store food at their warehouses but uses food issued to them directly. Most of their vehicles are fitted with communication equipment which enables them to be in constant communication back with the office. The World Vision has been applying ICT but not massively like world food program. It uses mostly email to remit food distribution data to its headquarter for analysis using spread sheet especially excel package. The information include, quantity of food received, quantity distributed, quantity lost in the process and the balance. It also gives the ration entitlement for each vulnerable member and amount issued to the victims. The organization is currently involved in the research on application of ICT which is still in progress. If completed, it intends to use scanned photos of victims and match them with food ration earlier allocated. There was no operational software that is known to be functional in world Vision. There was therefore difficulty in borrowing from their models which more in manual form.

2.3.3 Kenya Red Cross (KRC):

Red Cross acts as urgent of Kenya Government on food distribution. It also distributes its own sourced food from donors and other institutions. The organization together with WFP is implementing various emergency operation programs in 13 drought-affected districts targeting 790,000 beneficiaries. The Red Cross society uses email to remit data to headquarter for analaysis using spread sheet. The data include food received, issued and balances. Since the Red Cross operation is only known to be in spread sheet, it was difficult adopting this for the prototype software required for relief food operation in Kenya.

2.3.4 KEMSA (Kenya Medical Supply Agency):

The Kenya Medical Supplies Agency (KEMSA) is a specialized medical logistics provider for Ministries of Medical Services/Public Health and Sanitation-supported health facilities and programmes. KEMSA works to support the National Health Strategic Plan and the Kenya Health Package for Health in providing public health facilities with the "right quantity and quality of drugs and medical supplies" at the best market value. KEMSA's mandate is to procure, warehouse and distribute medical commodities to public health facilities operated by the Ministry of Medical Services. The ware houses for storage of the drug supplies are located over the country with the major ones being in Nairobi, Mombasa, Kisumu, Nakuru, Eldoret, Kakamega, Nyeri and Garissa. Although KEMSA appears to have similar operation to the requirement of relief food operation, there is lack of known software which can be modeled for this project.

2.3.5 Ministry of Northern Kenya

Another analysis was carried out at the Ministry of Northern Kenya. It was realized that the arid land project in this ministry developed early warning database system software to assist the ministry in monitoring the region often affected by famine and links each stage to a pre-planned response to mitigate the crisis and prevent its deterioration. The software has more emphasis on detection of early warning to trigger mitigation plan. This leaves out the distribution aspect which is the core function of the required software. However, its early warning component can be borrowed heavily to strengthen information sharing with public about food distribution information. The same component is useful when applied to assist in giving early warning on areas where disasters are likely to occur for the purpose of channeling relief items in time called relief prepositioning, in those areas.

2.4 Comparisons of various frameworks presented:

One major pitfall that can be observed in most of this framework is the theoretical inconsistencies. By arbitrarily combining various components from different models from diverse domains, the components consistency of constructs are being reconstructed. Sometimes the components included are so similar that they overload or mediate each other out. Another related issue as pointed out is the use of invalidated or incompatible model structure. This was basically observed in some of the models which have not been properly operational or being tested. Consequently, a theoretically model with good empirical support, which includes facilities for further expansion, would still be a valuable addition to this literature review.

The collusion of this comparison is that no single model presented above can meet all the requirement for new system but various components must be obtained from various models in order to come up with appropriate and adequate new framework to address Kenya case.

2.5 Framework for the proposed resource distribution for Kenya

The framework for the research is derived from existing frameworks of various organisations. It borrows heavily from WFP: COMPAS framework and integrated the borrowed components with other frameworks. This is because the COMPAS framework has clear structure of resource allocation, distribution, mitigation and response to disaster which has been extensively used in Kenya. It has also proper and cheaper mechanism for beneficiary identification which is easier to apply. This has been used in some parts of Kenya including refugee camps. However, it is noted that there are a few areas where the framework is not fitting exactly in Kenya case. This includes areas of warehousing where the resources are distributed directly to beneficiaries from national offices while in Kenya case, the commodity is stored at various levels of its distribution including national and districts.

2.5.1 Relevance of the Components borrowed from various frameworks studied.

The literature review of various frameworks discussed presented rich components in the resource distribution process which the study borrowed from. Some of these components were within the scope of the study and were therefore incorporated in the design and implementation the study while others were outside the scope and were therefore given as recommendation for further research in order to refine the study in future. Identification of the components in from the literature review work was necessary to assist researcher keep inventory of what the proposed prototype is supposed to do. The components provided information on hierarchy of the proposed framework, data transmission method and equipment to be used, data storage points, data processing points and method of data dissemination to beneficiaries. It also provided information on method to be used in the beneficiary identification. The structure of the components borrowed and their sources are presented in table 1 below. Most of the features borrowed are discussed in chapter 2 and 4.

Table 2-1 Components borrowed from various theoretical Frameworks discussed.

	Use of Module Considered	Borrowed Component	Function of the component in the system	Source
1	Structure	-Hierarchical Model	-Structure is similar to the proposed i.e structure is based on hierarchy from national , district and Davison etc	WFP:COMOPAS
2	Resource Mobilization	- Procurement	- The proposed framework handles commodity procurement i.e one of the ways of mobilizing the commodity is through procurement	WFPIFAF :2010
3		- Donations	- Proposed software handles commodity donations i.e one of the local and abroad	WFPIFAF :2010
4		- Beneficiary management	- The new system needs a Process of identifying beneficiaries in order to have the right beneficiary in the scheme	MOSSP
5	Resource allocation	- Criteria based allocation	- Resource is allocated in hierarchical model, from national to district. division, location and sub location	MOSSP
6	Resource delivery scheme	- National	- Commodity to be delivered at different levels i.e at NCPB National. NCPB district, District. division. location e.t.c	MOSSP
	Warehousing	- National	- Done at NCPB national,	MOSSP
		- Middle Level	- NCPB district	MOSSP

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		- Lower Level	- District Offices	MOSSP
5	Resource Transportation	- Use of roads		MOSSP
6	Early Warning	-	- Required for dissemination of information	Northern Kenya
7	Data Transmission Equipment	- Fibre optics	- Missing in all the modules but is required as for connectivity	MOSSP
		- VSAT	- Not required in the new system since expensive for rural area	WFP 2011 COMPAS
		- RADIO	- Required and recommended for transmission of information once resource is at the district	WFPF: 2011 COMPAS
		- WiMax, WiFi	- Not required since expensive	WFPF: 2011 COMPAS
		- VHF	- This is fixed to vehicles ferrying resources but not required at the time since expensive	WFPF: 2011 COMPAS
		- Use of Biometric	- Used for identification of beneficiaries but required since set up is too expensive	WFPF: 2011 COMPAS
		- Use of car track device	- Is required and adds value to those vehicles ferrying resources for distribution. Servers. Severs as a security to commodity, vehicle and the personnel	WFPF: 2011 COMPAS
		- Use of ration cards	- Required for identification of beneficiary	WFPF: 2011 COMPAS

Source: Research

2.5.2 Current Resource Distribution framework operation.

In addition to studying other organizations' resource distribution frameworks, the researcher carried out an in-depth study of resource distribution in Kenya, using the Ministry of State for special programmes system with a view to establishing the current operation. The main objective of this was to establish the current position of the resource distribution locally in order to identify gaps and challenges which were being addressed by the new framework.

A conceptual diagram was therefore constructed to depict the operation of resource distribution at the Ministry. From the diagram, it was noted that the process of resource distribution, mainly food, start from the Ministry Headquarter. Food is obtained from suppliers and donors. Both supplied and donated food is then stored at NCPB headquarter, ready for transportation to designated destinations. The transporters are then contracted to transport the food which they collect from the NCPB national to destinations. At the districts, food may be delivered to NCPB stores at district levels where it is collected by the DCs. The DCs may distribute the food at the district level to identified beneficiaries if any, transport the food down to division, location and sub-location based on the number of beneficiaries identified. The diagram below, figure 4, describes this process.

Conceptual framework for food distribution in Kenya
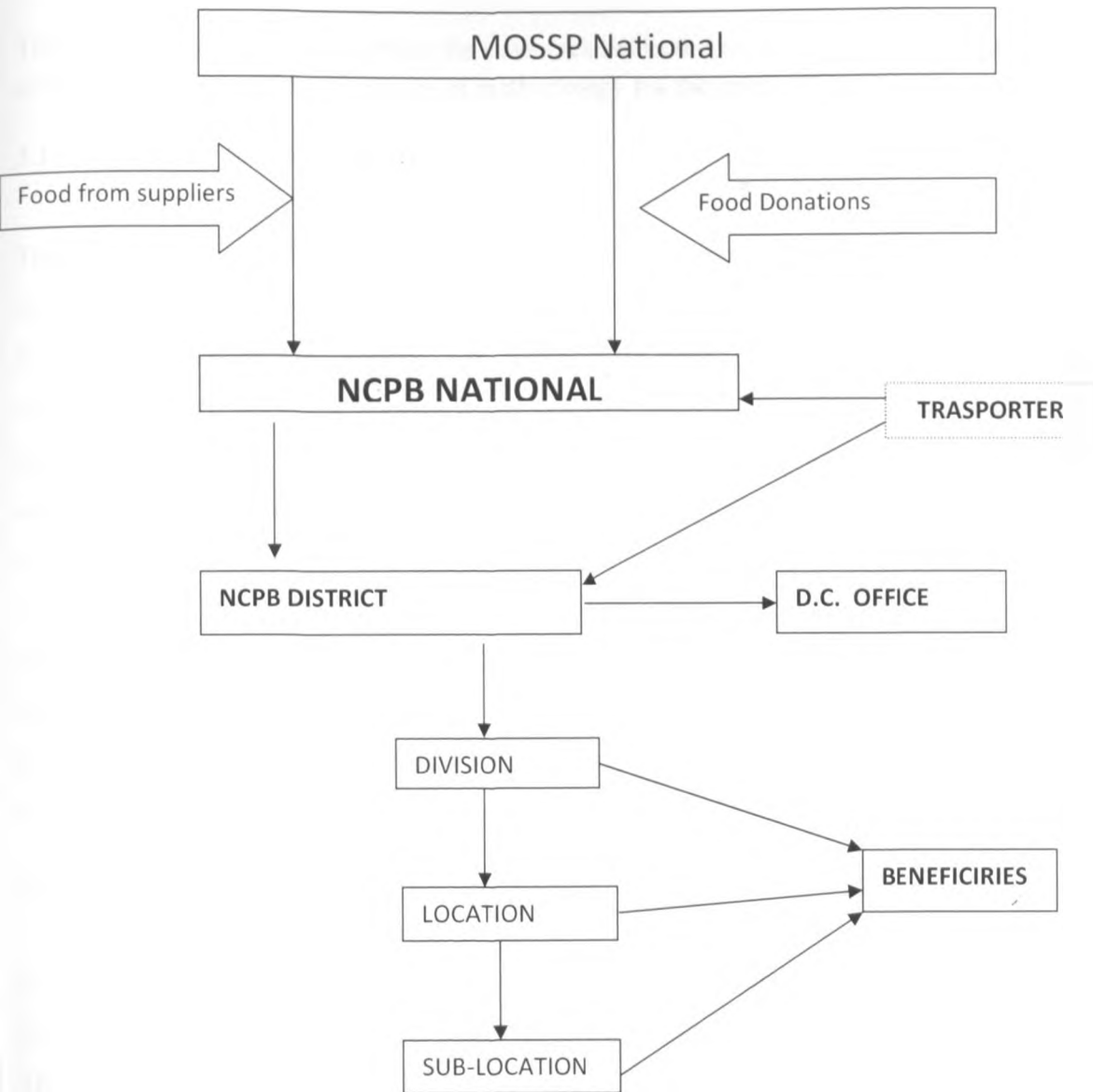
Source: MOSSP

Figure 2-4: Conceptual framework for the current food distribution in Kenya

CHAPTER 3: RESEARCH METHODOLOGY

Introduction

This chapter describes and explains the issues related to the research methods. It also explains the design of this study and justifies the choice of methodology for the research design.

3.1 Research Methodology

The research used a qualitative method approach, combining both desk reviews using resource distribution documents obtained from MOSSP and face to face interview with stakeholders involved in the resource distribution process. The approach of desk review and face to face interview using documents which are being applied in the resource distribution process, was appropriate and relevant method for the data collection for this research since it enabled the researcher to understand and map out accurately the current resource distribution system with a view to identifying gaps and challenges. It was also necessary to apply this method in order to get fast hand information from the actual people involved in the process. Use of food distribution was chosen as a resource due to its wide coverage i.e in the whole country and its regular distribution nature which is carried out on monthly basis. During the analysis, existing resource distribution documents were obtained from MOSSP to provide desk review process. The system analysis and the reviews carried out led to modeling of framework for the required system while taking into contribution the conceptual framework and literature review earlier presented.

3.2 System Analysis

System analysis was carried out by studying relevant documents obtained from MOSSP which are used in food distribution and by visiting a number of places where resource distribution process pass through. The personnel involved in distribution process were also visited and a face to face interview held in order to identify the flow of the process. These places includes: MOSSP, NCPB National and district, District commissioner office and division and location offices.

3.2.1 Sources of Data used

The researcher accompanied MOSSP officials in some of their missions on resource distribution in order to get fast hand information on the process. Among the districts visited include Machakos, Mwingi , Garissa and Turkana. During such trips, a number of discussions were held with the team involved in the distribution process. Data collection was also done during the visit using the documents obtained from MOSSP, DCs office, NCPB National and district, transporters and suppliers of the commodities. The documents include: **LPO, LSO**, allocation letters, food allocation schedule, LSO, Waybill and Stack card among others. Summary of these documents, their sources and purpose is presented below in a tabular form as follows:

Table 3-2 Source of data and documents used in the framework for System Architecture

No	Document Name	Obtained from	Usage
1	**LPO**	MOSSP	LPO- local purchase is issued to suppliers as the authority to enable the supply a given quantity of food items by quantity and value
2	**LSO**	MOSSP	LSO – is a local service order issued to contractors such as transporters in order to transport a given quantity of food by to a given destination as reflected in allocation schedule.
3	Allocation letters	MSSOP	Allocation letter is a document the Ministry sends to NCPB to authorize allocation of a given quantity of food at a given value to a particular district, based on the allocation schedule
4	Food allocation schedule	MOSSP	Food allocation schedule is a list of districts which are allocated food by allocation committee in MOSSP on regular basis i.e monthly.
5	Food issue Register	Provincial administration	Food issue registers are used at districts, division, location and sub-location to record food issued to needy beneficiaries i.e public.

6	Waybill		Waybills are documents used to record food movement to destinations at the NCPB. It captures the details of food transported, its destinations, vehicle used and the personnel involved.
7	Stack card	NCPB	Stack cards are used to add or remove food at the time of storage

Source: Research

3.2.2 Stakeholders Interview:

As mentioned above, the research also used face to face interview with the stakeholders involved in resource allocation and distribution process including MOSSP and NCPB personnel, DCs, DOs, Chiefs, Assistant chiefs and regular commodity transporters who are either government agencies or contracted firms through the GOK. The interview was conducted in a form of discussion, based on the documents used in commodity processing with a view to understanding the process involved in the distribution and identifying different roles played by stakeholders involved. The interview assisted in mapping out the process of resource distribution.

3.2.3 Data used for testing of the prototype system

The data used for testing the software to ensure that it generates desired results were extracted from the documents listed above. This included the entire document such as LPO, **LSO**, allocation letters, commodity allocation schedule, commodity issue registers, return cards and waybills.

3.2.4 Software used for data analysis (Excel Package):

Excel package software was used to analyze existing data to provide statistical data for prototyping the desired system. Data capture forms were developed using excel and Ms-word. Data collected through the forms were then captured into the system to generate prototype reports. Data analysis carried out includes monthly allocation of commodity, transaction required in the commodity processing, issue of AIEs and transportation of commodity.

3.2.5 Database and programming software tools used (Access and Visual Basic):

Combination of access and visual basic was used to design tables, relate them and develop data capture screens. The same was applied in developing various sample reports to show how each of the specific objectives were achieved.

3.2.6 Software used for Web based system: (PHP, MYSQL and Java Script):

The prototype system was later converted to web based database in order to achieve some of the functionalities which could not be achieved with access. These included hosting on the web online; carrying out some calculations especially criteria based commodity allocation. The system design and development was then carried out by first constructing framework for needs assessment, followed by identification of gaps and challenges and finally constructing the required framework for the prototype system.

3.2.7 Needs Assessment Framework

After the analysis of data obtained from MOSSP, the researcher constructed a needs assessment framework which outlines the requirement for the proposed system. The framework identifies the type of data required, source of data and documents and how they are expected to flow. It also identifies various stakeholders in the operation of resource distribution and their roles.

The entire process of food distribution is shown in Figure 5 below. This process begins with the Ministry of State for Special Programmes which budgets, procures and allocates commodities. Once the commodity is procured from suppliers, the suppliers deliver them to the NCPB National for storage. The Ministry then allocates the commodities from NCPB stores to various districts and issues contract to transporters who transport them to districts for distribution. Once commodities reach districts, they are sent to districts commissioners' office, divisional office, location office or sub-location office for distribution to beneficiaries. A number of documents whose sources are indicated in figure 3-5 are used as source of data during the distribution process. These documents include: LSO, LPO, letter of allocation, delivery notes, invoice and allocation schedule among others. Various stakeholders who are involved in the process of resource distribution at various stages including suppliers, Ministry of State for Special Programmes, transporters, NCPB, transporters, DCs, D.Os, Chiefs and assistant chiefs are also included in the framework. Their roles in the process are also described in the diagram(see fig.3-5).

Source: Research
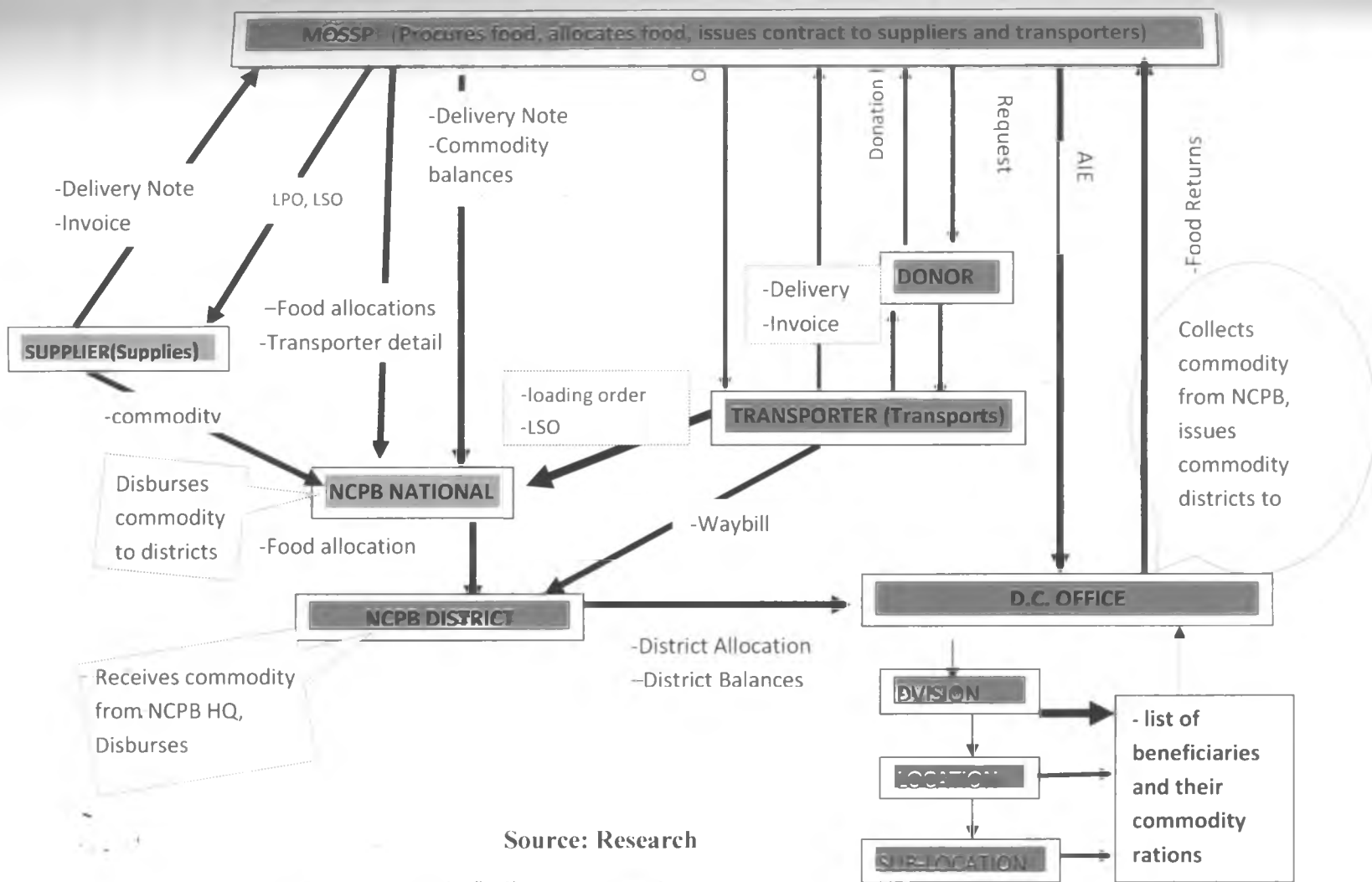
Figure 3-5: Needs finding Framework

3.1.7 Gaps and Challenges found out during the fact finding Analysis

The needs assessment findings together with fact finding analysis identified areas of gaps and challenges in the resource distribution process which needs to be addressed. Some of the challenges found in the resource distribution process are:

i.   Lack of linkage between quantity of commodity allocated and that which is dispatched.
ii.   Lack of linkage between quantity of commodity dispatched and that delivered at destination.
iii. Lack of mechanism in sharing information about resource being distributed with the public
iv.   Lack of criteria based method of resource distribution to districts
v.   Difficulty in generating various reports showing quantities of commodity at various stages of its processing over a given period of time.

The following were the impact of the challenges on resource distribution process:

- Massive loss of commodity during the distribution process which could not be accounted for.
- Poor passage of information to the public about distribution of commodity, leading to actual beneficiaries being left out during resource distribution.
- Resources allocated and channeled to non needy districts instead of needy ones.
- Commodity accessed by people who do not qualify to have it.

3.3 Prototype System Design

The needs assessment framework assisted the research in coming up with an entire overview of resource distribution framework which is presented below in figure 6. The framework maps out the stages involved in resource distribution from its point of sourcing to the point of issue to beneficiaries. It also maps out areas where resource distribution experiences challenges and is therefore lined up with the main objective of the research i.e coming up with a suitable ICT based framework to address these challenges in the commodity distribution process.

From the diagram, those areas in which the process of resource distribution experiences challenges and therefore needs improvement on accountability were identified and marked. As in the diagram, the point marked **No. 6.** Is one of those areas. This follows the challenge which was given as a result of lack of accountability in commodity allocated and its dispatched and between commodity dispatched and delivered. Thus the software prototype designed considered these challenges.

Figure 3- 6: Food distribution framework overview diagram

RELIEF FOOD BUDGETTING

(each food item i.e Maize, beans rice etc is allocated a yearly budget)

→ 1 →

RELIEF FOOD PURCHASEED/SOURCED

Food item in the budget is purchased/sourced (LSO, LPO, Delivery Note used)

↓ 2

COMMITTEE ALLOCATES FOOD AND AIES TO NEEDY DISTRICTS (PS Approves food allocated and AIEs)

← 3 ←

FOOD ALLOCATION DOCUMENTS SENT TO PLAYERS

(DCs, NCPB, transporters, Suppliers)

↓ 4

FOOD IS DISPATCHED TO DISTRICTS (Allocated Food is collected from NCPB/ Suppliers and the same is dispatched)

→ 5 →

DISPATCHED FOOD IS DELIVERED TO DISTRICTS (Delivery notes/ food return documents are used)

Item Issued should be tied to allocation Serial no from which it is drawn.

↓ 6

Item delivered should be tied with SNo. From where it is dispatched.

FOOD DISPATCHED TO DISTRIBUTION CENTRES

(Divisions, locations, sub-locations, institutions i.e schools. Registers and return forms are used)

← 7 ←

FOOD DISTRIBUTION

(Food is distributed to needy people including citizens, school feeding

ALLOCATIONS		DISPATCHES FROM THE ALLOCATION
Maize 90Kg – Qnty- 6000 Beans 90Kg- Qnty - 4000 Beans 50Kg- Q nty - 2000	Dispatch 1	Maize 90Kg–Qnty- 2000 Beans 90Kg- Qnty- 3000 Beans 50Kg- Qnty- 800
Balances	Bach 1	
Maize 90 Kg -Qnty- 4000 Beans 90 Kg –Qnty- 1000 Beans 50 Kg – Qnty- 1200	Dispatch 2	Maize 90 Kg-Qnty - 2000 Beans 90Kg –Qnty- 500 Beans 50 Kg –Qnty- 1000
Balances		
Maize 90 Kg –Qnty- 2000 Beans 90 Kg- Qnty- 500 Beans 50 Kg- Qnty- 200	Dispatch 3	Maize 90 Kg- Qnty- 2000 Beans 90 Kg –Qnty- 500 Beans 90 Kg –Qnty- 200

Figure 3-7: Proposed scheme for solution of gaps and challenges

The figure 6 demonstrates basic concept required in linking the **food allocations** and **food dispatches.** The same concept is applied in linking food dispatches and **deliveries** at destinations. **The model ties** specific food **allocation** to all dispatches made from it by tagging all dispatches from the same allocation with the allocation serial number. When all the dispatches are totaled together from same allocation, they sum up to the original allocation figure. Any gap between the allocation and sum of dispatches made from it is accounted for as the balance yet to be dispatched or lost. The research used needs analysis framework, food distribution framework overview diagram to conceptualize the system development requirements. These included relevant components of system design such as flow charts, data flow diagrams and data tables among others (see next page).
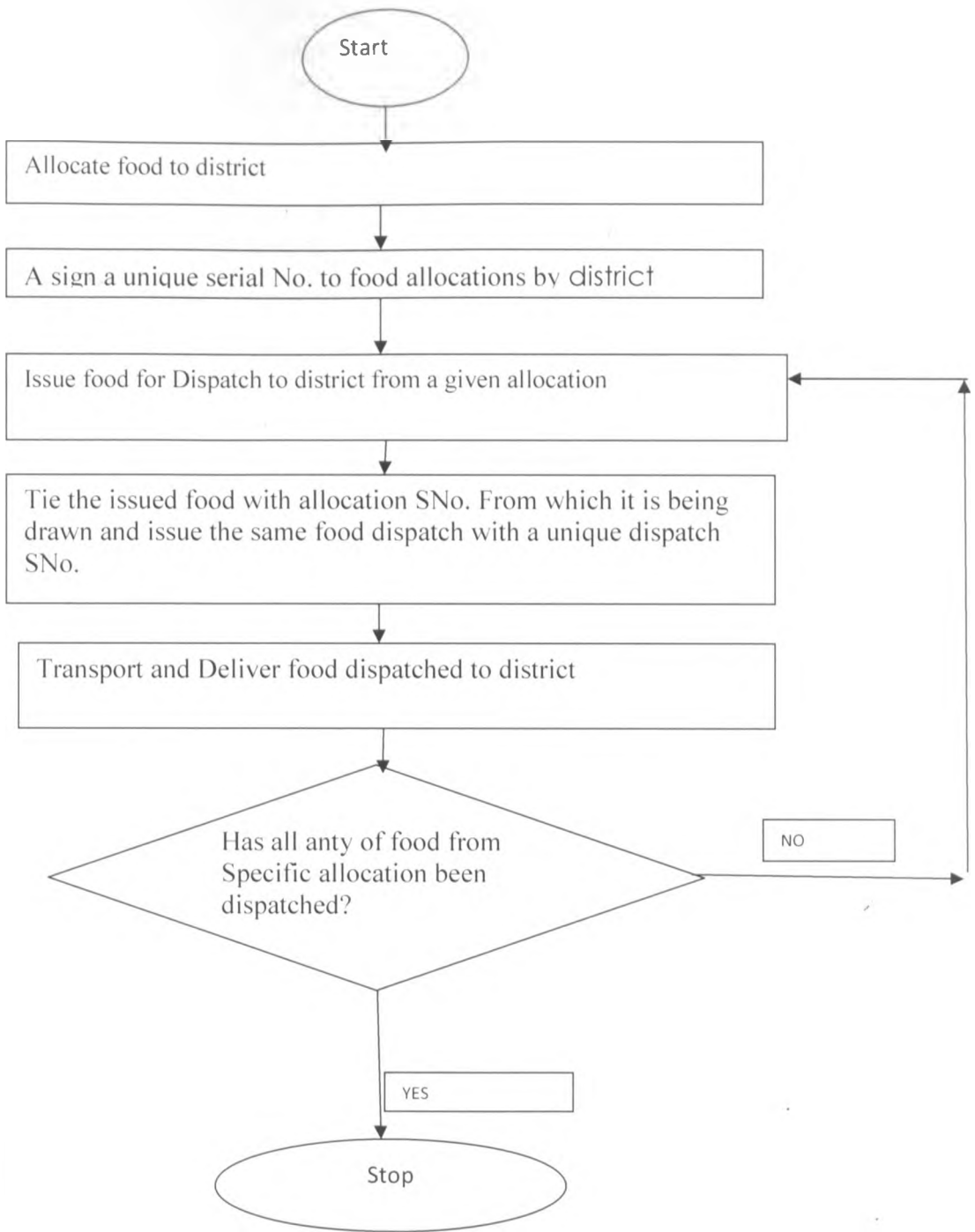
Figure 3-8: Flow chart representing food dispatch process from its allocation.
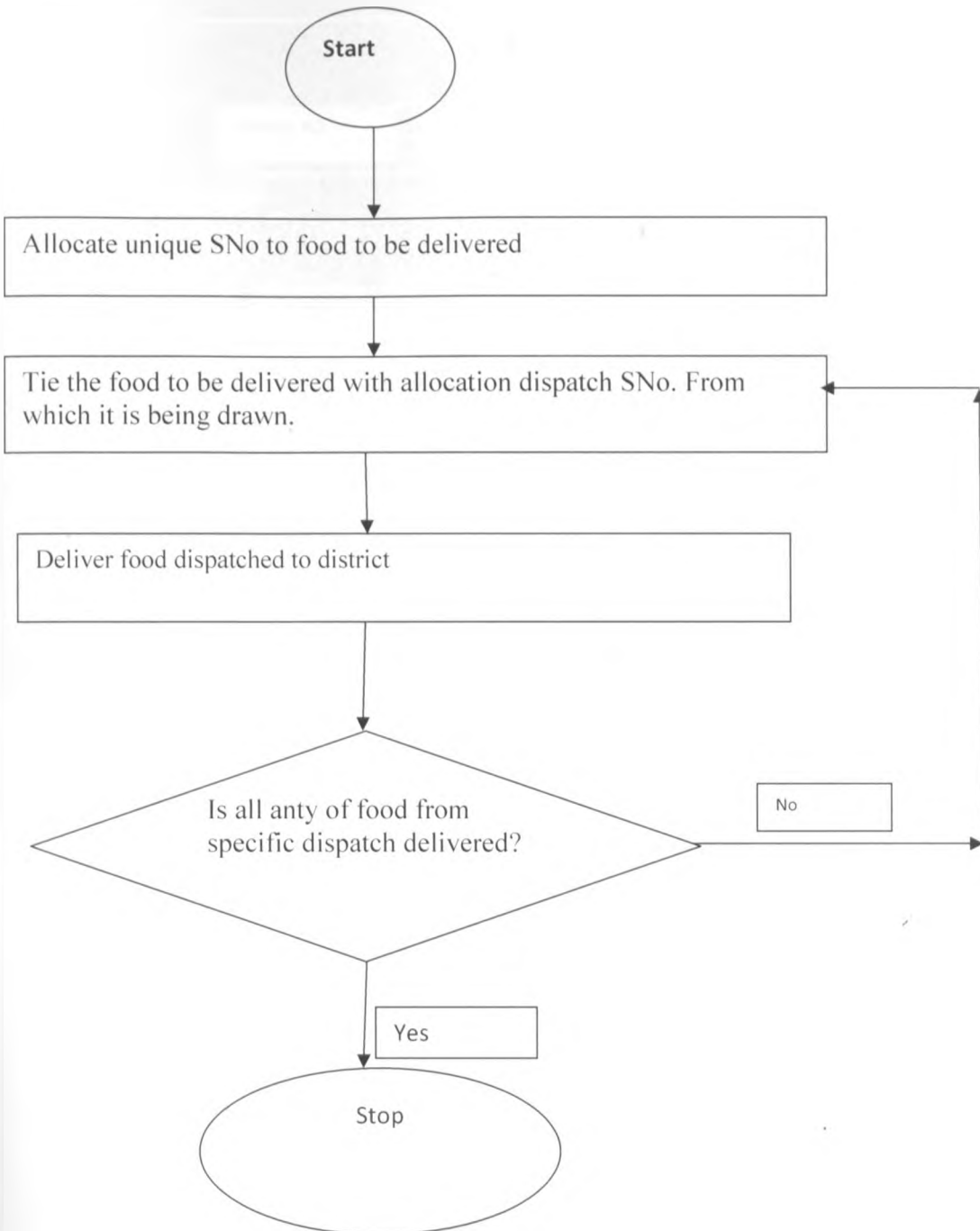
Figure 3-9: Flowchart representing food delivery process from its point of dispatch

Food is supplied to ministry

External Entity

Ministry HQ

Process

Food direct to District for storage

Data Store

NCPB for storage

Data Store

At NCPB dispatches food to district

Process

District distributes

Process

District store forward food to DCs office

Data Store

Food is Distributed to public

External Entity

3-10 : **Data Flow Diagram For Food Distribution Process**

Table 3-3 Main Database Data Structure table

NO	Item	DataType	Description
1	AllocSNo	Text	Serial Number for allocatio
2	AllocNo	Text	Lookup table from Allocation
3	District	Number	District code looup
4	AllocSupportSource	Number	Loop code for support source
5	AllocStore	Number	Lookup for store source
6	Purpose	Text	Purpose of allocation
7	FindingSource	Number	Lookup for source of funds
8	Maize 90 kg	Number	Qnty of Maize
9	Beans 90 Kg	Number	Qnty of Maize
10	Beans 50 Kg	Number	Qnty of Beans 90 kg
11	VegOil	Number	Qnty of Beans 50 Kg
12	unimix	Number	Qnty of Unimix
13	MilkPowder	Number	Qnty of Milk Powder
14	Rice 50 kg	Number	Qnty of Rice
15	PgPiece	Number	Qnty of Peogion Piece

Table 3-4 A.I.E Data Structure Table

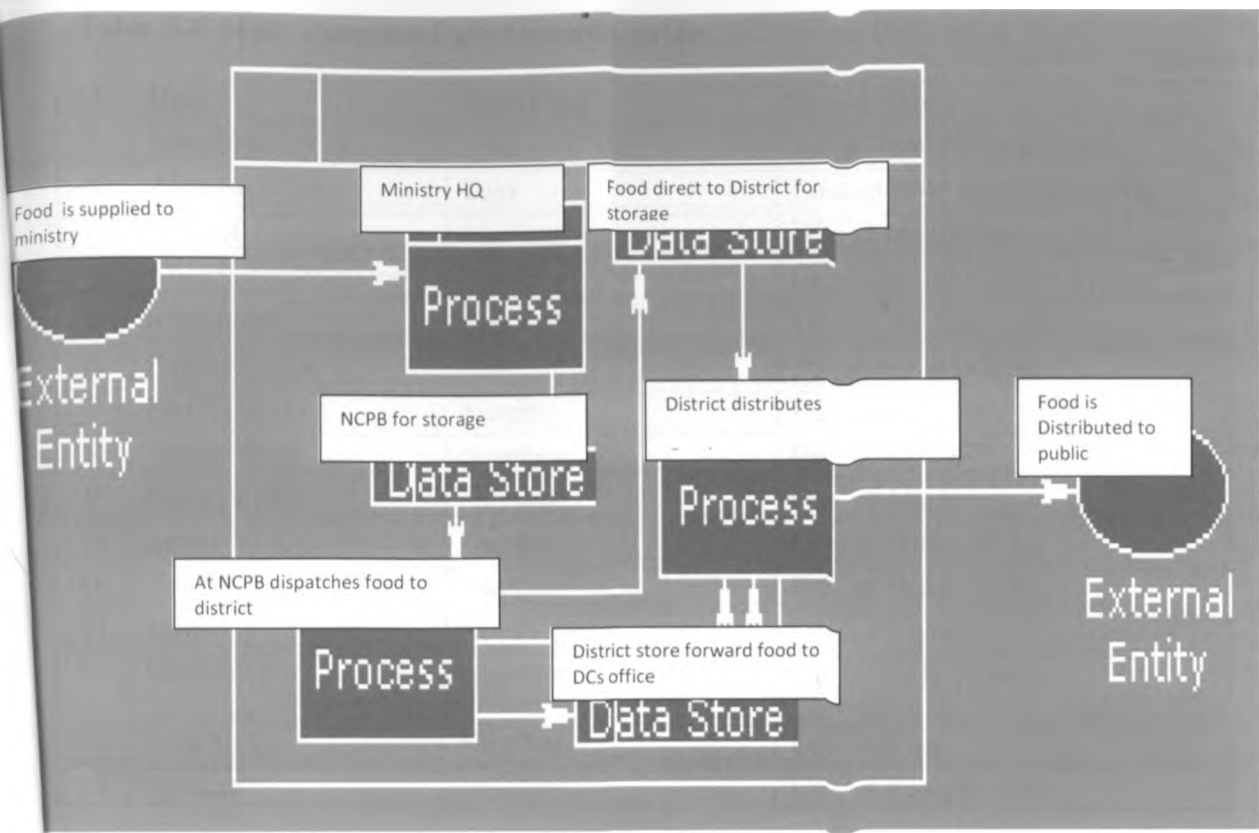| NO	Item	DataType	Description
1	AIENo	Text	Number of AIE
2	AIEDate	Date/Time	Date when AIE was prespared
3	AIEAmnt	Number	Amount of AIE
4	AllocNo	Number	Alloction No
5	District	Number	District code where AIE sent
6	ChargedAccNo	Text	Account sending fund
7	ReceivingAccNo	Number	Account receiving fund
8	IssuingOfficer	Number	Officer issuing fund
9	IssuingOfficerNo	Number	Officer issuing fund P/No
10	IssuingOfficerDesig	Number	Officer issuing fund P/No
11	Acctcharge	Number	Accountant In cahrge
13	Dispatched	Y/No	Whether AIE is sent
14	DispatchedDate	Number	Date when the A.I.E is sent

Table 3-5 Food dispatch data structure table

NO	Item	DataType	Description
1	FDispatchSNo	Auto	Food dispatch Serial Number
2	FAallocNo	Number	Food allocation number
3	District	Number	District code lookup
4	DistAllocNo	Number	Loop code for support source
5	AllocNo	Number	Lookup for a lock No
6	DespCategory	Text	Category of allocation
7	WaybillSorderNo	Number	Waybill/sales order number
8	DespMaize90kg	Number	Qnty of Maize 90kg
9	DespBeans 90 Kg	Number	Qnty of Maize 50kg
10	DespBeans 50 Kg	Number	Qnty of Beans 90 kg
11	DespVegOil	Number	Qnty of Beans 50 Kg
12	DespVegoil	Number	Qnty of vegetable oil
13	DespMilkPowder	Number	Qnty of Milk Powder
14	DespRice 50 kg	Number	Qnty of Rice 50kg
15	DespPgPiece	Number	Qnty of Peogion Piece
16	DespUnimix	Number	Qnty of Unimix

Table 3-6 District data structure table

NO	Item	DataType	Description
1	DistCode	Number	District Serial Number
2	DistName	Text	Name of the district
3	Province	Number	Province lookup serial Number
4	County	Text	County loop up name

Table 3-7 County Data Structure table

NO	Item	DataType	Description
1	coutyCode	Number	County Serial Number
2	CountyName	Text	Name of the County

Table 3-8 Province Data Structure Table

NO	Item	DataType	Description
1	Province Code	Number	Province Serial Number
2	ProvinceName	Text	Province Name ,

Figure 3-11: Relationship Tables of data fields

FoodDispatch
- FDespatchSNo
- FAllocSNo
- AllocItem
- DistFAllocNo
- AllocNo
- DistrictCode
- DespDocCategory
- waybillOrSOderN·
- Maiz90kgTotCost
- Beans90kgTotCos
- Beans50kgTotCos
- VegOilTotCost
- UnimaTotCost

FoodDeliver.
- WBill_SorderNo
- FDelSNo
- FDespatchSNo
- FAllocSNo
- AllocNo
- District
- AllocSupportSou
- AllocPurpose
- AllocStore
- FundingSource

Transporter
- TransPCode
- TranspName

AllocPurpose
- PurposeCode
- TargetGroup

36
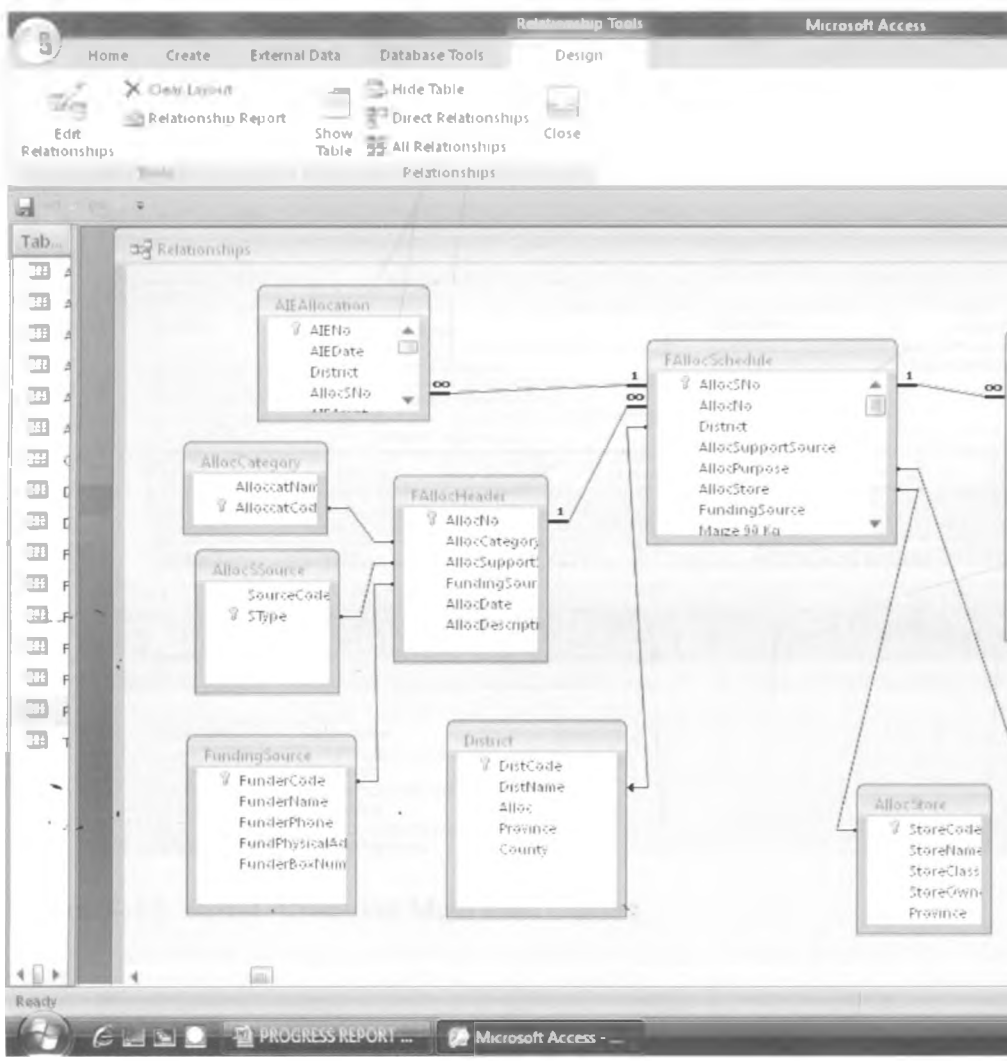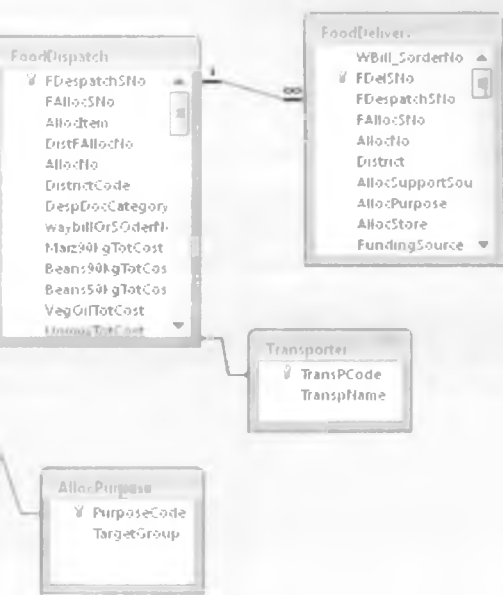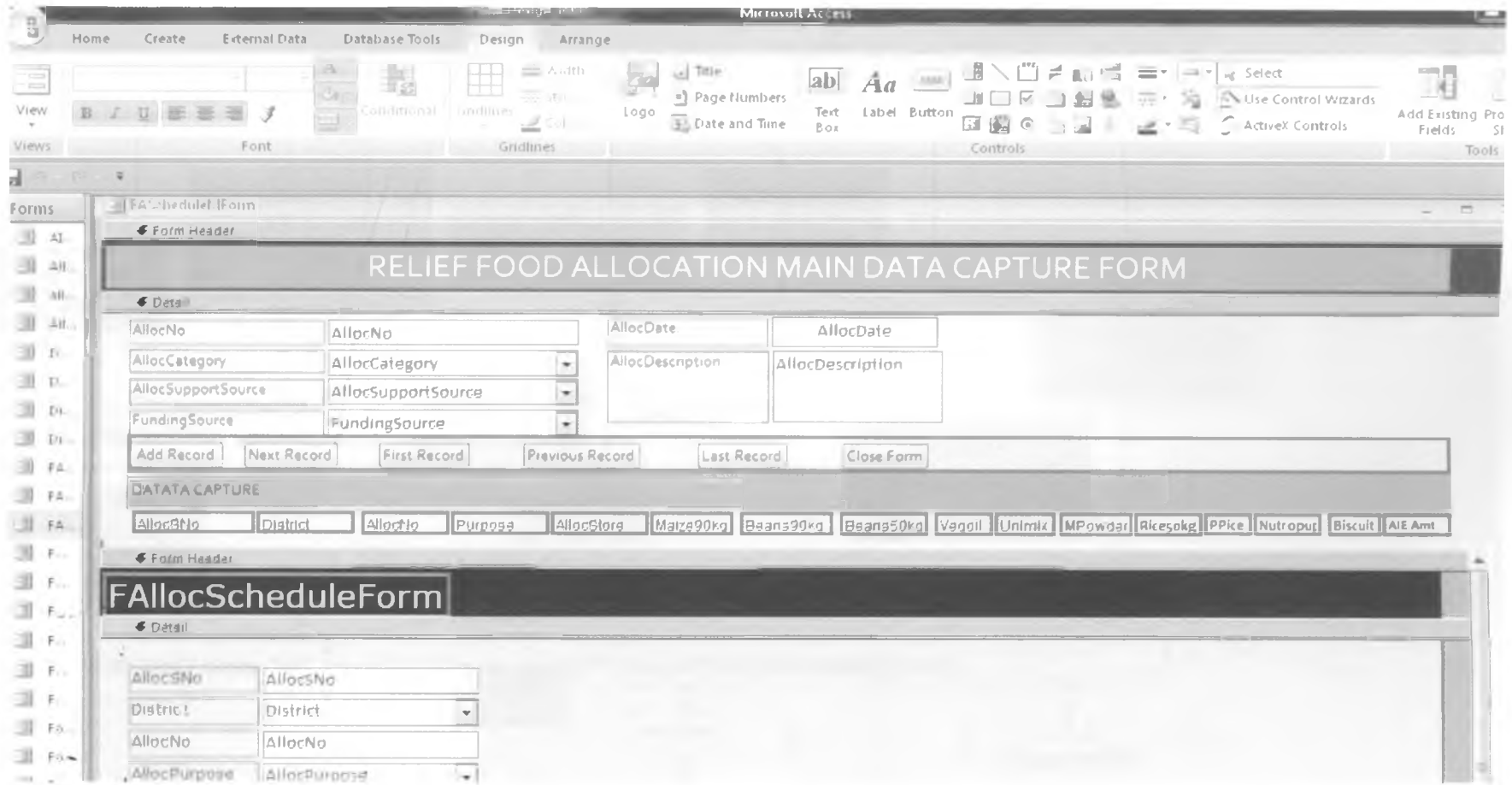
Figure 3- 12: Relief Allocation Main Data capture

Figure 13: Framework for System Implementation Architecture

The diagram contains the following elements:

MOSSP (Data capture point)

- Allocation letter
- Allocation schedule
- purchase order
- Transporter details

- Sales order
- Waybill

-LSO
-Allocation schedule

-Delivery Note
-Invoice

-District allocated
- A.I.E allocation

NCPB NATIONAL (Data Capture point)

-LSO,
-Alloc Schedule

TRANSPORTER

-Food Delivery
- available food
qnty

-Allocation Schedule
-Waybill
-Sales order

-Waybill

NCPB DISTRICT (Data Cap)

Delivery Note

D.C. OFFICE (Data capture point)

DIVISION

LOCATION

SUB-LOCATION

-Allocation Qnty
-List of beneficiaries
-Qnty of food issued
-Qnty of food received
-Balances

CHAPTER 4: RESULTS, ANALYSIS AND DISCUSSION

This chapter presents results, analysis and discussion of the system beyond conceptual framework and design in the same format. The first discussion is a presentation of a table regarding the type and functions of the results generated from the system. The next parts of the discussion show the results which are then followed by analysis and finally discussions.

4.1   Results

Table 9   Table of Result and Implementation (TRI)

Source Figure	Gap and Challenge being addressed	Type of report	Brief description on how the challenge is addressed	Comment
11	lack of linkage between quantity of commodity allocated and that which is dispatched (i)	Commodity allocation/ Dispatch report	Tabulated result showing expected reconciliation of resource allocated and dispatched	More explanation of the report is provided below the figure
12	lack of linkage between quantity of commodity allocated and that which is dispatched (i)	Commodity allocation/ Dispatch report	Ties all dispatches to allocation from they draw their quantities. This Makes it possible to total all such dispatches to and tally them in order to identify gaps between allocated and dispatched.	More explanation of the report is provided below the figure
13	Lack of linkage between quantity of commodity dispatched and that delivered at destination (ii)	Commodity Dispatch /delivery report	Ties all deliveries to the dispatch from which they draw the commodity quantity by assigning them to similar dispatch serial number. Make indication of dispatch made against all delivery made from it.	More explanation of the report is provided below the figure

14	Difficulty in generating report showing quantity of commodity allocated over a given period of time (v)	Monthly allocated report by districts and commodity item.	Monthly allocation of commodity item to districts and their totals	More explanation of the report is provided below the figure
15	Lack of linkage between quantity of commodity dispatched and that delivered at destination (ii)	Monthly Commodity Dispatch and delivery report	Status of commodity dispatched and delivered to various districts and their totals	More explanation of the report is provided below the figure
16	Balances on items allocated	Report filters items which have been allocated and collected and those that have been allocated but yet to be collected	This is a status report that filters food allocated but not yet dispatched and that allocated and dispatched. This is shown by indication tick under the column of collected. It is by month, commodity and district	More explanation of the report is provided below the figure
17	Identify district to be allocated commodity	District allocation selection screen implementation	This to assist in selection districts to be allocated commodity from a pool of many districts	MOSSP
18	Screen in capturing data or A.I.E allocation	A.I.E data capture screen implementation	This is to assist in allocating A.I.E for the distribution of commodity to beneficiaries	MOSSP
19	Screen for allocation of commodity	Item allocation screen implementation	This assist in identifying items to be allocated from a list of items	MOSSP

4.1.2 Reports Generated from the prototype

The results from this study are presented by the reports generated from the prototype . For each of the result presented, there is an explanation regarding the function of the report and how it meets the desired objective. The major contribution of these results is to show how quantity of the resource distributed can be tracked from its point of allocation to delivery. In the entire process, the system ties allocation, dispatch and delivery of resources so as to be able to track the quantity allocated up to delivery. The process of the resource distribution begins with allocation. At the allocation point, each allocation is tagged with allocation serial number. Each time a dispatch is made from that allocation, the system monitors balances to be dispatched inn the next tranche and ties the same for accountability. This is basically possible by tying the dispatch with serial no. of the allocation from which it is drawing resource. Several outputs in form of reports and screens are resented below, indicating the results achieved from the prototype system when allocation data is captured into the system. Each report has an explanation giving its function and role:

As an example, the report shown below indicates that the data on food allocation obtained from the Ministry of State for Special programs were fed into the system. Each of the food allocated was tagged with a serial number and was then dispatched in several tranches. All the dispatches from a specific allocation were tagged with the same allocation serial number in order to provide tracking for the source of the allocation. Through this mechanism, the specific quantity of food could be shown in the report to be tracked to its point of delivery as explained below:

District	AllocSNo	AllocDate	DispatchNo	DispatchDate	Maize90kg	Beans90kg	Beans50kg	VegOil	Unimix	MilkPowde	Rice	PgPiece	Nutrotap	Biscuts	ALetterDa	LoaderName	LoaderDes
KILIFI	001-102-1210	16-Dec-10	ALOCATION		300	0	200	100	0	0	200			0	0		
			3	12-27-2010	200	0	0	50	0	0	100	0	0	0	12-25-2010	Rono Ngetich	Proc Office
			2	12-26-2010	200	0	100	50	0	0	0	0	0	0	12-25-2010	Mark Oneno	Proc Office
			4	12-27-2010	100	0	100	0	0	0	100	0	0	0	12-23-2010	Tom	Clerk
	TOTAL DISPACHE PER ALLOCATION				500	0	200	100	0	0	200	0	0	0			
KAMKUNII	001-801-0411	16-Apr-11	ALOCATION		423	0	423				0						
			6	3-17-2011	23	0	23	0	0	0	0	0	0	0	5-20-2011	Erick Atom	Clerk
			3		400	0	400	0	0	0	0	0	0	0	5-21-2011	kasuku Koki	Clerk
	TOTAL DISPACHE PER ALLOCATION				423	0	423	0	0	0	0	0	0	0			
MATUGA	003-114-1210	16-Dec-10	ALOCATION		300	0	200	200	0	0	200			0	0		
			7	12-17-2010	300	0	100	100	0	0	100	0	0	0	12-17-2010	Akacha Gimo	Cleark
			8	12-18-2010	100	0	100	100	0	0	100	0	0	0	12-18-2010	Mbaluto geoi	Cleark
	TOTAL DISPACHE PER ALLOCATION				200	0	200	200	0	0	200	0	0	0			
KINANGO	004-115-1210	16-Dec-10	ALOCATION		500	0	200	100	0	0	200			0	0		
			10	12-24-2010	200	0	100	50	0	0	0	100	0	0	12-22-2010	Jaoko	Clerk
			11	12-24-2010	300	0	100		0	0	0	100	0	0	12-24-2010	Jaoko	Clerk
	TOTAL DISPACHE PER ALLOCATION				700	0	200	100	0	0	0	200	0	0			
MSAMBUENI	005-116-1210	16-Dec-10	ALOCATION		300	0	200	100	0	0	200			0	0		
			12	12-23-2010	400	5	100	50	0	0	100	0	0	0	12-17-2010	Obach Fred	Clerk
			13	12-24-2010	100	0	100	50	0	0	100	0	0	0	12-23-2010	Tom Mbarac	Clerk

Figure 4-14: Sample Report on food Allocation/Dispatch **Report**

(Report details are explained below):

Discussion of result from figure 4-14

The above report is a result addressing one of the key challenges identified during the analysis finding stage presented i.e

- Lack of linkage between quantities of commodity allocated, dispatched and delivered at destination.

The explanation of how the report satisfies this challenge is as follows:

The first Record From the report shows that Kilifi district was allocated Maize, packed in bags of 90 kg and the allocated quantity was 500. This allocation was issued with allocation serial number 100-102-1210 and was done on a date of 16-12-2012, see report above.

All Maize food dispatched from this allocation was tagged with this allocation serial number so that they can be totaled together. That allocated quantity of maize of 500 bags was dispatched on three tranches in order to be transported to Kilifi for delivery.

A part from the dispatches being tied to the allocation serial number where they draw data from, they were also issued with dispatch serial numbers to identify them. The scheme of dispatching the 500 bags of maize allocated was as follows:

- The first dispatch was number 3 which transported 200 bags of maize on the date of 12/27/2010

- The second dispatch was number 2 and transported 200 bags and was done on the date of 12/12/2010 and

- The last dispatch was number 4 and transported 100 bags and was done on date of 12/27/2010.

When all the three dispatches on Maize with the same allocation serial number were added together, their total quantity added up to the 500 bags which was the quantity allocated for Kilifi by this allocation number. This result is found in the row indicated by 'TOTAL DISPATRCHES PER ALLOCATION' in the report above.

Similar calculation is done to other food items as listed below in the report.

RELIEF FOOD DISPATCH /DELIVERY REPORT

DistName	Disp/Del		Desp DelivDate	Maize90kg	Beans90kg	Beans50kg	VegOil	MilkPow	Unimix	Rice	PgPiece	Jurrotap	Biscuts	ReceiverD	ReceiName	Vehicle No	Transpoter
KILIFI	Dispatch Status	☑	12/26/2010	200	0	100	50	0	0	0	0	0	0				
	Delivery Status	☑	12 28 2010	100										Clerk	Don Oneno	GK 453	MOSSP
	Delivery Status	☑	12 29 2010						0					Clerk	Mark Many	GK 876	MOSSP
KAMKUNJI	Dispatch Status	☑	4 29 2011	23	0	23	0	0	0	0	0	0	0				
	Delivery Status	☑	4 30 2011	25	0	23	0				0	c		Clerk	Yotta Tom	KAQ 345W	Tarnad
MATUGA	Dispatch Status	☑	12 17 2010	100	0	100	100	0	0	100	0	0	0				
	Delivery Status	☐	12 25 2010										0	Clerk	Racha Tito	GK 897T	NYS
MATUGA	Dispatch Status	☑	12 18 2010	100	0	100	100	0	0	100	0	0	0				
	Delivery Status	☐	12 24 2010	100	0				c	100				Clerk	Vita Thoma	GK 6754Q	MOSSP
KINANGO	Dispatch Status	☑	12 24 2010	200	0	100	50	0	0	0	100	0	0				
	Delivery Status	☐	12 25 2010			100	50	c	c		100			Clerk	Ayub Rita	GK 453W	MOSSP
KINANGO	Dispatch Status	☑	12 25 2010	300	0	100	50	0	0	0	100	0	0				
	Delivery Status	☑	12 26 2010					c						Clerk	Tom saka	GK 453W	MOSSP
MSAMBUENI	Dispatch Status	☑	12 23 2010	400	0	100	50	0	0	100	0	0	0				
	Delivery Status	☑	12 24 2010						c					Clerk	Rita Peter	KAT 6734E	Tarnad
MSAMBUENI	Dispatch Status	☑	12 24 2010	100	0	100	50	0	0	100	0	0	0				
	Delivery Status	☑	12 29 2010		0			0	0	100	0			Clerk	Erick Tiya	KAV 763T	Tarnad
GANZE	Dispatch Status	☑	12 23 2010	300	0	100	50	0	0	100	100	0	0				
	Delivery Status	☑	12 24 2010		0	100	50			100	c	0		Clerk	Fulafula	GK 342Q	
GANZE	Dispatch Status	☑	12/24 2010	200	0	100	50	0	0	100	100	0	0				
	Delivery Status	☑	12 25 2010	200					c		c			Clerk	Victoria Aka	GK 364W	MOSSP

Figure 4-15: Sample Report on Food dispatched/Delivered

(Details of the report are presented below).

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Discussion of results from figure 4-15

The above diagrams shows quantity of food dispatched food against that which is delivered. The column of Disp/del shows various ticks to indicating which food was dispatched but is not yet delivered. Dispatch status is shown by red color while delivery is shown by blue color. Where there is a tick, it shows that the dispatch was delivered and where there is no tick it shows that the dispatch has not been delivered. In addition to the food, the information across the table shows the loader of the food and its receiver. It also the transporter used, driver of the vehicle as well as the vehicle registration number.

AllocNo	AllocDate	Collected	AllocSNo	cLetterDate	District	ze 90 Kg	ins 90 kg	ins 50 kg	VegOil	Unimix	Rice	poweder	PgPiece	Nutrotap	Biscuts
Apr-2011	29-Mar-11														
		☐	001-108-0411	4/1/2011	KALOLEN	1893	0	1691	50	0	0	0	0	0	0
		☐	002-109-041:	4.1 2011	GANZE	1893	0	1691	50	0	100	0	0	0	0
		☐	003-110-0411	4 2 2011	BAHARI	1893	0	1691	50	0	150	0	0	0	0
		☐	004-106-041:	4.1 2011	MALINDI	1893	0	1691	50	0	100	0	0	0	0
		☐	012-103-0411	4/2/2011	TAITA TAV	1763	0	1575	30	0	50	0	0	0	0
		☐	009-117-0411	4/2/2011	LAMU WE	0	0	0	30	0	50	0	0	0	0
		☐	008-116-0411	4/1/2011	MSAMBUE	6863	0	6134	100	0	100	0	0	0	0
		☐	007-113-0411	4/2/2011	KINANGO	6863	0	6134	50	0	200	0	0	0	0
		☐	006-114-0411	4/3 2011	MATUGA	6863	0	6134	100	0	200	0	0	0	0
		☐	005-112-0411	4.1 2011	RABAI	1893	0	1691	50	0	150	0	0	0	0
						31823	0	28432	600	0	1100	0	0	0	0
Dec-2010	16-Dec-10														
		☑	038-416-1210	12 30 2010	MARAKW:	300	0	200	100	0	0	0	0	0	0
		☑	031-409-1210	12 29 2010	LAIKIPIA I	300	0	200	50	0	0	0	0	0	0
		☑	045-430-1210	12 24 2010	BARINGO	300	0	200	50	0	0	0	0	0	0
		☑	033-412-1210	12 30 2010	LAKIPIA C	300	0	200	50	0	0	0	0	0	0
		☑	013-441-1210	12 30 2010	TURKANA	1000	0	100	30	0	0	0	0	0	0

Figure 16: Sample Report on Food allocated/collected by month

(Details of the report are explained below)

Discussion of the result from figure 4-16

The above report shows quantity of food which is allocated and collected from store or allocated but not yet collected from stores. If the box under collected column is ticked, the quantity of food allocated is collected and while where the box is blank, the quantity of food allocated is yet to be collected in a given month of the year. Thus for each month, there is allocated but yet to be collected and allocated and collected.

This is report is indicating the status on food dispatched and delivered to various destinations.

RELIEF FOOD DISPATCH/DELIVERY REPORT

AllocSNo	District	AllocPurpos	AllocStore	Depot	Destination	icLetterDate	spatchDate	Maize90kg	Jeans90kg	Beans50kg	BespRice	VegOil	Unimix	MilkPowder	Biscuts
	KILIFI	Vulnerable	Kilifi NCPB												
				Kilifi NCPB	DC Office	12/25/2010	12/27/2010	400	0	0	100	0	0	0	0
				Kilifi NCPB	DC Office	12/25/2010	12/26/2010	300	400	0	0	0	0	0	0
				Kilifi NCPB	DC Office	12/25/2010	12/27/2010	300	890	0	100	0	0	0	0
								1000	1290	0	200	0	0	0	0
	KAMKUNJI	Vulnerable	Kilifi NCPB												
				Nairobi NC	DC Office	5/21/2011	5/27/2011	400	0	400	0	0	0	0	0
				Nairobi NC	DC Office	5/20/2011	3/17/2011	23	0	23	0	0	0	0	0
								423	0	423	0	0	0	0	0
	GANZE	Vulnerable	Kilifi NCPB												
				Mombasa r	DC Office										

Figure 4-17: Sample Report on Food Allocation

The report below filters food allocated but not yet dispatched that allocated and dispatched by indication tick under collected column.

Food Allocation/dispatch Report

AllocNo	Collected	District	AllocSNo	AllocDate	:LetterDate	ize 90 Kg	ins 90 kg	ins 50 kg	VegOil	Unimix	Rice poweder	PgPiece	Nutrotap	Biscuts	AIEAmnt
Apr-2011	☐	KALOLENI	001-108-0411	29-Mar-11	4/1/2011	1893	0	1691	30	0	0	0	0	0	0 200,000.00
Apr-2011	☐	GANZE	002-109-0411	29-Mar-11	4/1/2011	1893	0	1691	30	0	100	0	0	0	0 150,000.00
Apr-2011	☐	BAHARI	003-110-0411	29-Mar-11	4/1/2011	1893	0	1691	30	0	130	0	0	0	0 200,000.00
Apr-2011	☐	MALINDI	004-106-0411	29-Mar-11	4/1/2011	1893	0	1691	30	0	100	0	0	0	0 150,000.00
Apr-2011	☐	TAITA TAVETA	012-103-0411	29-Mar-11	4/2/2011	1763	0	1573	30	0	30	0	0	0	0 200,000.00
Apr-2011	☐	LAMU WEST	009-117-0411	29-Mar-11	4/2/2011	0	0	0	30	0	30	0	0	0	0 150,000.00
Apr-2011	☐	MSAMBUENI	008-116-0411	29-Mar-11	4/1/2011	6865	0	6134	100	0	100	0	0	0	0 100,000.00
Apr-2011	☐	KINANGO	007-115-0411	29-Mar-11	4/2/2011	6865	0	6134	30	0	200	0	0	0	0 150,000.00
Apr-2011	☐	MATUGA	006-114-0411	29-Mar-11	4/3/2011	6865	0	6134	100	0	200	0	0	0	0 150,000.00
Apr-2011	☐	RABAI	005-112-0411	29-Mar-11	4/1/2011	1893	0	1691	30	0	130	0	0	0	0 200,000.00
		For the Month of		Apr-2011		31823	0	28432	600	0	1100	0	0	0	0
Dec-2010	☑	MARAKWET WES	038-416-1210	16-Dec-10	12/30/2010	500	0	200	100	0	0	0	0	0	0 100,000.00
Dec-2010	☑	LAIKIPIA EAST	035-409-1210	16-Dec-10	12/29/2010	500	0	200	30	0	0	0	0	0	0 100,000.00
Dec-2010	☑	BARINGO CENTE	043-430-1210	16-Dec-10	12/24/2010	500	0	200	30	0	0	0	0	0	0
Dec-2010	☑	LAIKIPIA CENTR	...	16-Dec-10	...	...	...	...	...	...	...	...	...	...	...

Figure 4-17: Food allocation/Dispatch Report

4.2 Analysis of the results

This topic covers the analysis of the results obtained from the design, development and implementation of the prototype system. The discussion is based on the specific objectives earlier stated in chapter two as follows.

- **Specific objective No. 1**

The specific objective No. 1 was to map out current resource distribution process in Kenya in order to identify factors that affect the distribution process.

The results of this objective are in two areas namely mapping out process of resource distribution and identifying factors affecting the resource distribution.

4.2.1 Mapping out the process of resource distribution.

The process of resource distribution in Kenya was studied from its point of budgeting to delivery at the destination. The major stages in the distribution identified during the study were as follows:

I. Budget Allocation

The process of resource distribution begins with budget allocation. At this stage, the ministry allocates funds to purchase resources for the whole year. Most of items to be purchased are identified at this stage. Once funds are available, resources are purchased from suppliers who deliver them to NCPB stores mostly at headquarter but sometimes at district of destination if the resources are required urgently for distribution like in the cases for disasters. The ministry of Special Programme contracts NCPB to store the items and pays NCPB on monthly basis for the space and maintenance. Some of the commodity which may be required later are not purchased immediately but would be purchased as need arises. Among the documents used during stage 1 is Government annual Printed Estimate book.

II. Purchase of Commodity

Once budget process is complete, commodity is purchased from pre-qualified suppliers. Some of the commodity such as maize is purchased by NCPB from various producers on behalf of MOSSP.

The purchased commodities are delivered and stored at NCPB, awaiting allocation and subsequent disbursement to final destinations.

III.   Allocation Commodity to needy districts

Once commodity is purchased and delivered at the NPB stores, a committee on allocation which is normally at the Ministry of state for Special Programmes HQ meets to allocate them to districts under consideration. The report from the district need food assessment committee which identifies the requirement for each of the districts to be allocated commodities is given consideration. The reports for those districts classified under arid and semi arid lands are compiled by commodity security situation assessment team, comprising a multi-agency and multi-sect oral assessment teams. This is a program called EMOP (Emergency Operation Response) which carries out assessment on needs for every six months from regions specified and provides assessment report. The remaining needy districts reports are compiled by district steering committee under the chairmanship of DCs. After the allocation by committee, the list is forwarded to the permanent secretary MOSSP who approves it for onward disbursement together with associated A.E.I to cater for the cost of distribution.

IV.   Commodity allocation and dispatch documents to various stakeholders.

Upon the approval of allocation by the PS, commodity allocation letters are sent to NCPB stores, informing them that specific amount of commodity has been allocated to specific districts. At the same time, LPO, LSO are sent to suppliers as authority to supply the commodity to the government. The commodity supplied is stored at NCPB or sent direct to district of destination for distribution. Upon the receipt of allocation letters, NCPB headquarters issues release orders to their districts offices instructing them to release allocated commodities to DCs for distribution. If the commodity required is not at the NPB district offices, the NCPB headquarter issues the release orders for the commodity to be transported to the district of destination. If the commodity is to be supplied directly by suppliers and not in NCPB stores, the letter is sent to supplier instead. A copy of the same letter is sent to DCs, informing them of the allocation made to them. At the same time, A.I.E for distributing the commodity is disbursed to respective DCs for the transportation to the districts i.e division, location and sub-location.

V. Dispatch Commodity

The commodity is then dispatched from NCPB stores to various districts of destinations. For those commodities which are available at the NCPB at district levels. NCPB National issues sales orders to their depots at the districts levels, instructing them to release the items to DCs who have been allocated the commodity. If the commodity is available only at the National, the letter is then issued to the depot manger to release them.

VI. Transportation and delivery of Commodity to needy districts

The commodity is transported by prequalified private transporters or government vehicles including Ministry, NYS and military vehicles. Waybills/dispatch orders are issued to transporters allowing them to transport the commodity to the designated Districts, either from the NCPB depot at the district or national or from the supplier's depots.

Once commodities are delivered at the DCs office, their records regarding the quantity received are entered in registers. The waybill/dispatch order are then certified stating that the commodity transported is in the right quantity specified and is also in good condition. If the quantity of commodity is found to be less, the difference is recorded and reasons for being less is given. The receiver signs the document and remains with a copy of the same for record. The other copy is sent back to the HQ for record purpose.

VII. Delivery Commodity to other lower level destinations

Upon receiving the commodity delivered, the DC office then roles some of them to division, location and sub-location. All these levels receive commodity which they distribute to beneficiaries. Upon compilation of the distribution, the said areas record commodity in manual registers whose summary is sent back to district for compilation and is forwarded to the MOSSP Headquarter.

4.2.2 Solutions of factors affecting the distribution process of commodity:

As part of the specific objective No.1, the study found out the following factors to be affecting the distribution process commodity.

i.   Lack of linkage between quantity of commodity allocated and that which is dispatched

ii. Lack of linkage between quantity of commodity dispatched and that delivered at destination.

iii. Lack of information sharing with the public about commodity distribution.

iv. Lack of criteria based method in resource allocation to districts.

The study identified the following solutions to mitigate the above factors affecting resource distribution in Kenya:

i. Lack of linkage between quantity of commodity allocated and that which is dispatched.

Quantity of commodities allocated was not linked with the quantities of commodities dispatched, making it difficult to reconcile the two. This factor was solved in the software by linking the commodity **allocations** and commodity dispatches through a serial number. In one allocation, there were various commodities. Each allocation was issued with a serial number and all subsequent dispatches from the said allocation were tagged with the same serial number of the allocation they are drawing commodity data from. This made it possible to generate report of all dispatches from a specific allocation and therefore identify gaps if any.

ii. Lack of reconciliation between quantity of commodity dispatched and that delivered at destination.

Likewise lack of linkages between commodities dispatched and that which is delivered was reconciled in the system by same concept of linking commodity dispatched and that **delivered.** Through this system, all commodity delivered from specific dispatch were totaled original allocation they were made from and all deliveries made specific dispatch totals up to the original dispatch.

iii. **Lack of mechanism in sharing information about resource being distributed with the public**

Sharing of information on resource distribution was sorted out by developing web based software where all information is made available to the public. By this, the status of commodity relating to its quantity, time of dispatch, time of delivery and number of expected beneficiaries are is known. The information also includes time taken from the point of allocation to beneficiaries, comparison of quantity of commodity issued from a depot against quantity received at the destination, returns of commodity distribution at a given point. management of commodity donations by organizations or individuals will be made available.

Iv. Lack of criteria based method in resource allocation to districts.

This was also found to be a factor that affects resource distribution process. This project has constructed this concept as inbuilt parameters in the web based software. At the time of resource allocation, required parameters are fed into the software which then calculates the allocations based on the set up criteria. Relevant parameters required for these calculations are as follows:

Total quantity of food available for distribution = A

Total Number of needy population from all districts to get food = B.

Number of needy population for district to be considered = C

If quantity of food to be allocated to a particular district is (D), it can be calculated as follows:

D = Qnty of food available x No. of needy population in that district, divided by the total no. of needy population from all the districts to be considered.

Thus: $D = AxC/B$.

A sample report extracted from the software report is presented below to demonstrate the mechanism.

- **Specific objective No. 2**

The Specific Objective No. 2 was: **to develop a framework for the resource distribution process in Kenya using the distribution of relief food as a case study**.

In regards to this objective, the researcher constructed a framework that was used to provide turkey solutions in providing all stages of resource distribution from point of budget to delivery (*see figure 10*). The framework maps the process of resource distribution from all the points which includes the suppliers, the National NCPB, MOSSP, NCPB District and District, division, location and sub-location. In the model, areas that need accountability enforcement were identified and highlighted. Before the construction of this model, conceptual frameworks in figure 5 and 6 had been constructed to provide overview of areas requiring accountability and proposed solution scheme for the listed problems.

- **Specific objective No. 3**

The specific objective No. 3 was: to design prototype system based on the framework to address the gaps and challenges in the distribution process.

The research implemented the prototype system using framework for System Implementation architecture from figure 6. The implementation of the system addresses the gaps and challenges in the resource distribution as indicated in specific objective No. 3. These challenges include:

i.   Lack of linkage between quantity of commodity allocated and that which is dispatched.

ii.   Lack of linkage between quantity of commodity dispatched and that delivered at destination.

iii.   Lack of mechanism in sharing information about resource being distributed with the public

iv.   Lack of criteria based method of resource distribution to districts

v.   There was difficulty in generating report showing quantity of commodity allocated over a given period of time.

vi.   Difficulty in generating report on quantity of commodity dispatched to a destination over a given period of time.

vii.   Difficulty in generating report on quantity of commodity delivered over a given period of time.

Table 9 below gives the tabulation of outputs as results from the figures which are either report generation or other form of outputs such as screens. The table also shows how the gaps and challenges were addressed by the reports.

4.3   Discussion

This topic evaluates the success of this project and also covers discusses the issues that were of concern in the study.

4.3.1 Evaluation of the research objectives

The evaluation of the objectives is outlined based on the how they were set in chapter two. They include:

i.   Specific objective No. 1 was: to map out current resource distribution process in Kenya in order to identify factors that affect the process of resource distribution.

The research achieved this objective by using current existing resource distribution framework at the MOSSP to map out the process with a view to understanding the concept. The current resource

distribution was then presented in figure 4 of the diagram. This gave the researcher the opportunity to identify gaps and challenges in the current system. The design of chapter following chapter in the research methodology took into consideration all theses challenges and even came up with diagrams in figure Through the Through the study, the process was mapped out from the point of budgeting to distribution at the beneficiary level. The study then developed a framework that indicates the flow of information and data and finally documented the process. The used desk review using resource distribution documents obtained from MOSSP. It also used face to face interview with stakeholders involved in the process of resource distribution including suppliers of commodities, NCPB officials, transporters, MOSSP officials, DC offices, D.Os, chiefs and assistant chiefs. A number of gaps and challenges affecting the distribution of resources were also identified and their solutions provided in the framework and the prototype system development. This objective was therefore achieved by:

- Successfully carrying out the study which was able to map out the whole process in terms of information flow required, identification of stages in the process and stakeholders involved in the distribution.

- identifying gaps and challenges affecting resource distribution process which include lack of linkage between quantity of commodity allocated and that which is dispatched, lack of linkage between quantity of commodity dispatched and that delivered at destination, lack of mechanism in sharing information about resource being distributed with the public and lack of criteria based method for equitable resource distribution to districts.

The study notes that areas where the study has achieved its objectives compares well with the literature review of the study. Most of the areas carried out during literature review have been achieved including the tracking the commodity during the stages of allocation, dispatch, transport and delivery.

ii. The specific objective No. 2 was: to develop a framework for the resource distribution process using the distribution of relief food as a case study.

The research used various frameworks of resource distribution globally and locally to come up with appropriate ICT based one suitable for Kenya. Comparison was made among these frameworks presented but the research picked on the one from World food program which is used locally in the country which was modified in some areas in order to fit Kenyan scenario. The other frameworks

presented relevant components which were borrowed from as indicated in table 9. The research therefore achieved the objective by:

- Studying the frameworks used by various organizations and making relevant comparison for Kenya case.

- Developing a suitable framework for Kenya by adopting WFP local frameworks and borrowing relevant components from various frameworks studied.

iii. The specific objective No. 3 was: to design prototype system based on the framework constructed to address the gaps and challenges in the resource distribution process.

In addressing this objective, the research outlined those gaps and challenges identified to be affecting resource distribution. A prototype system was therefore developed with a view to addressing these gaps and challenges. The challenges which included lack of linkage between quantity of commodity allocated and that which is dispatched, lack of linkage between quantity of commodity dispatched and that delivered at destination, lack of mechanism in sharing information about resource being distributed with the public, lack of criteria based method of resource distribution to districts and difficulty in generating reports showing quantity of commodity during its stages of processing were addressed.

- Tagging all dispatches made from specific allocation with same serial number of that allocation. This makes it possible to total all the dispatches made from that specific allocation and compare the sum with original allocation from which the dispatches are being drawn from. A similar process is instituted for quantity of commodity dispatched and that delivered at the store or district levels. This is due to the fact that one dispatch can be delivered more than once. All deliveries from a specific dispatch are tagged with the specific dispatch serial number. All deliveries can then be subtracted from the original dispatch in order to get the variance.

- **Converting system to web based** - This makes information available over the net so as to enable public access information about commodities being distributed. Use of web based application makes it possible for the public to access information over the web without having to wait. This assists the public to know when the resource is issued, what quantity is issued and which date it was issued. before it was difficult to do this since the information was not available. **Introducing parameters** to effect distribution based criteria - using population, number of available

resource, number of districts to share the resource and feeding the same to the system. The system provided resource distribution based on these parameters which are fed into it. Use of resource allocation criteria makes it possible to allocate resource to deserving districts rather than allocating without considering predefined factors.

- Generating reports on monthly allocations and balances after collection from the allocation and making deliveries.

4.1 Moving the system from prototype to Implementation.

To effectively apply this system, it is important that the prototype system is moved to implementation. In this aspect, a number of key areas for this implementation are considered. The levels are considered in the light of services being offered and source of information. These levels include MOSSP National, district, NCPB national, NCPB district, Division, location and sub-location. The information and data are obtained from suppliers, donors and transporters. The levels represented the stages where implementation is required are presented as follows.

4.1.1 MOSSP National

The system server is installed and hosted at MOSSP National office, drawing all data from other areas. The data capture is in a multi user platform to facilitate faster capturing of data. The access to the system is tagged up with security of user's privileges. This is to help fast track audit trail should there be a problem. This level is to be equipped with a complete system which is able to provide all the reports including National, County and Districts, and divisions. All the data captured at each level should be able to provide management reports at the national level. Thus to enhance this, a server and some training of data operation, programmers to maintain the system must be addressed. Data relating to purchases, allocation, A.I.E Allocations are captured at the National level directly. The rest of data which are captured at other levels are to be forwarded to this level to generate reports.

4.1.2 NCPB National:

All the depots of National Cereals and produce Boards should be installed with the system. Data relating to commodity storage at all levels should be captured directly. All the commodities supplied

should be captured into the system at National Cereals and produce board where they are stored. Likewise all the commodities issued by the Ministry to districts should be captured into the database. Personnel from the Ministry staff and from The NCPB should be trained to work on this system at all levels where NCPB storages are placed. Their record should always be reconciled in order to avoid food loss.

Since commodity is issued to districts directly, the counties may not play a great role in molding the operation. However, for the purpose of knowing what commodity has been issued to the all districts in a particular county, it is important that the system be installed at county level to safe guards this type of report. The training required at the county will only be for the purpose of generating county reports.

4.1.3 District, Division, location and Sub-location:

Most of the work is concentrated at the district levels. All the government offices at the districts levels have computers, making implementation possible. The districts will have all the data relating to sub-locations, locations, and divisions within their areas.

All these data should be forwarded in a designed form format and submitted to districts for data capture. The summary of the same can be used at this level for decision making but can still be accessed at the national level. Each district should only have those division, locations and sub-locations within its area. The training at this level should include operation and software maintenance and should be conducted to clerks at ICT personnel at this level.

The research main objective was to identify gaps and challenges in Current Resource distribution process in Kenya with a view to coming up with a suitable ICT based model to address them.

Main objective stated above was split into three specific objectives to enable the research address them objectively. These specific objectives were: to map out current resource distribution process in Kenya in order to identify factors that affect the distribution, to develop a framework for the resource distribution process and to design prototype system based on the framework to address the gaps and challenges in the distribution process. The study addressed the specific objectives as follows whose success are evaluated and discussed.

5.1 Conclusion

In conclusion, the implementation of this system is useful for the society since it enforces accountability in the resource distribution and therefore eliminates loses and diversion of the resources to non-deserving areas due to lack of monitoring and evaluation mechanisms. It has been the practice that people entrusted with the commodity distribution and management take advantage of poor tracking system in order to mess up with the commodity. If this prototype system is taken further to its implementation level, the loss of commodity during its processing will be a thing of the past since it can be traced from the point of issue to delivery.

The resources and its associated distribution to beneficiaries who deserve them, mostly those affected by disaster, is funded through government taxation system. It is therefore prudent that the management of such resources is done in the transparent, accountable, effective and efficient manner a fact which this research will be of great relief to. The implementation of the system is not only necessary to track the commodity but also to sustain lives of many by ensuring that the commodity issued is tracked and also delivered to the right beneficiaries.

The allocation of resource to districts based on criteria of relevant factors also assists those districts which are deserving but were not getting adequate resources for their use due to lack of the criteria to apply. Since the process of the resource distribution process in Kenya was manual for along time, it was difficult for scholars who want to know more on the process to give their intellectual contribution on the same, a factor which this system has contributed for immensely. With this system in place, the researcher believes that the scholars will now be able to continue with necessary future work to make the implementation a reality. The system improves monitoring and evaluation mechanisms and therefore assists the Government in coordinating their operations which is a key in improving service delivery to the public. One of the key emphases of this system is to make available information both to the public and stakeholders in the process. The availability and accessibility of information, will therefore make this system restores confidence of donors and other stakeholders in the government whom they entrust with the resource distribution. In all, the active implementation of this system alleviates those people who are affected by various kinds of disasters from suffering.

5.2 Recommendation

The study recommends for areas that still need to be covered in future study to make this system more useful. Most of these areas could not be covered since they were out of the scope for this study but more so due to limited time and resources needed to cover them. For future work, two modules should be included to form a part of this research.

- **Procurement module** - this is handles commodity procurement and its delivery to stores of at NCPB before it is dispatched to destinations. The procurement process of commodities and their subsequent deliveries should be included in this scheme since the commodity allocation which is the first module for this study begins after this process is completed.

- **Identification of beneficiaries for the commodity distribution** - Since this research was based on free commodity distribution to needy people, procedures of identifying beneficiaries should be included as a module in the system. A database detailing information about those beneficiaries should be developed. The beneficiaries should then be issued with a form of identification which may be a voucher, food ration, biometric data identification or any other tool to assist in the identification during the distribution process. Factors considered crucial in qualifying the beneficiaries for such kind of benefit must be discussed and agreed upon.

- **Installation of tracking device to all vehicles transporting commodities** - To accomplish the process of resource distribution, all the vehicles ferrying commodities should be installed with car track so that the security of the vehicle, people inside it and the commodity is guaranteed. Where firms are given contracts to transport commodities, the condition should be issued to those firms to install such devices before they are allowed to participate in the tender for transportation of commodity. This will improve on the accountability in the sense that ones a vehicle leaves the station, it will be able to unload the consignment at designated points only.

- **Rolling information on resource distribution to mobile phones of the public** - to achieve sharing of information about the resource distribution with the public in the most effective way, the information should be rolled to the mobile phones of users instead of targeting web and internet access usage only. This is due to the fact that not all users are able to access information through internet but most users own mobiles and know how to use them for such information access to and implementation of this technology alone implies that there would be limitation in the access to this information to the few who can access internet only.

Appendices

Reference 1: Reference on Literature Review

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Appendix 1-1 Sample document on allocation of relief food schedule for the month of October,2012

ALLOC. NO.	NO	DISTRICT	COUNTY	Maize (90kg Bag)	Rice (50kg Bag)	Beans (50kg Bag)	Veg. Oil (6 X3 Ltr Carton)	Nutropup (Bales)	Beef (cartons)	A.I.E (Ksh.)
		COAST PROVINCE								
3-1-2011	1	Kaloleni	Kilifi	500	0	200	50	0		50.000
3-2-2011	2	Ganze	Kilifi	700	0	200	50	0		75.000
3-3-2011	3	Bahari	Kilifi	500	0	200	50	0		75.000
3-4-2011	4	Malindi	Kilifi	500	0	200	50	0		75.000
3-5-2011	5	Rabai	Kilifi	500	0	200	50	0		75.000
3-6-2011	6	Matuga	Kwale	500	0	200	50	0		50.000
3-7-2011	7	Kinango	Kwale	1.000	0	200	50	0		100.000
3-8-2011	8	Msambweni	Kwale	500	0	200	50	0		75.000
3-13-2011	13	Voi	Taita Taveta	1.000	0	200	50	0		100.000
3-14-2011	14	Magarini	Kilifi	1.000	0	200	50	0		100.000
3-15-2011	15	Tana River	Tana River	500	0	200	50	0		100.000
3-16-2011	16	Bura	Tana River	500	0	200	50	0		100.000
3-17-2011	17	Tana Delta	Tana River	500	0	200	50	0		100.000
		Sub Total		9.800	400	3.400	850	0	0	1.350.000
3-18-2011	18	Baringo North	Baringo	1.000	0	300	50	0		100.000
3-19-2011	19	Baringo Central	Baringo	1.000	0	300	50	0		100.000
3-20-2011	20	Naivasha	Nakuru	500	0	200	50	0		50.000
3-21-2011	21	Gilgil	Nakuru	500		200	50	0		75.000
3-22-2011	22	Marigat	Baringo	1.000	0	300	50	0		75.000
3-23-2011	23	Mogotio	Baringo	1.000	0	300	50	0		75.000
3-24-2011	24	Marakwet West	Elgeyo/Marakwet	1.000	0	175 (G grms)	50	0		75.000
3-30-2011	30	Mashuru	Kajiado	1.000	0	300	50	0		75.000

Ref	No.	Constituency	District							
3-31-2011	31	Kajiado North	Kajiado	500	0	200	50	0		75.000
3-32-2011	32	Isinya	Kajiado	500	0	200	50	0		75.000
3-33-2011	33	Laikipia West	Laikipia	1.000	0	300	50	0		75.000
3-34-2011	34	Laikipia East	Laikipia	1.000	0	300	50	0		75.000
3-48-2011	48	Pokot East	Baringo	2.000	0	300	50			300.000
3-49-2011	49	West Pokot	West Pokot	2.000	0	300	50			300.000
3-50-2011	50	Pokot North	West Pokot	2.000	0	300	50			300.000
3-51-2011	51	Pokot South	West Pokot	1.000	0	300	50			300.000
3-52-2011	52	Pokot Central	West Pokot	2.000		300	50			300.000
		Sub-Total		43.000	0	9.300	1.750	300	600	5.375.000
3-53-2011	53	Garissa	Garissa	500	800	300	50	20	100	150.000
3-54-2011	54	Fafi	Garissa	500	800	300	50	20	100	150.000
3-55-2011	55	Lagdera	Garissa	500	800	300	50	20	100	150.000
3-62-2011	62	Mandera North	Mandera	500	800	300	50	20	100	150.000
3-63-2011	63	Tarbaj	Mandera	500	800	300	50	20	100	150.000
3-64-2011	64	Banisa	Mandera	500	800	300	50	20	100	150.000
3-65-2011	65	Eldas	Wajir	500	800	300	50	20	100	150.000
3-66-2011	66	Wajir East	Wajir	500	800	300	50	20	100	150.000
3-67-2011	67	Wajir West	Wajir	500	800	300	50	20	100	150.000
3-68-2011	68	Wajir North	Wajir	500	800	300	50	20	100	150.000
3-69-2011	69	Wajir South	Wajir	500	800	300	50	20	100	150.000
3-70-2011	70	Habaswein	Wajir	500	800	300	50	20	100	150.000
3-71-2011	71	Lafey	Wajir	500	800	300	50	20	100	150.000
3-72-2011	72	Dadaab	Wajir	500	800	300	50	20	100	150.000
3-73-2011	73	Wajir North (Buna)	Wajir	500	800	300	50	20	100	150.000
		Sub-Total		10.500	16.800	6.300	1.050	420	2.100	3.150.000
3-74-2011	74	Mbeere North	Embu	500	0	200	50	0		50.000
3-75-2011	75	Mbeere South	Embu	500	0	200	50	0		50.000
3-76-2011	76	Isiolo	Isiolo	500	200	200	50	0	100	100.000
3-77-2011	77	Garba Tulla	Isiolo	500	200	200	50	0	100	100.000
3-78-2011	78	Ikutha	Kitui	1.000	0	200	50	0	100	100.000

3-79-2011	79	Mukaa	Kitui	1.000	0	200	50	0	100	100.000
3-121-2011	121	Tigania West	Meru	1.000	0	300	50	0		100.000
3-122-2011	122	Tigania East	Meru	1.000		300	50	0		100.000
3-123-2011	123	Kangundo	Machakos	1.000	0	500	200	0		100.000
3-124-2011	124	Matungulu	Kangundo	1.000	0	500	200	0		100.000
3-125-2011	125	Buuri	Meru	1.000	0	300	50	0		100.000
3-126-2011	126	Meru South	Tharaka-Nithi	1.000	0	300	50	0		100.000
3-127-2011	127	Maara	Tharaka-Nithi	500	0	200	50	0		100.000
		Sub-Total		60.500	1.600	12.600	3.000	0	4.100	6.000.000
3-128-2011	128	Nyatike	Migori	500	0	300	50	0		75.000
3-129-2011	129	Mbita	Homabay	500	0	200	50	0		75.000
3-130-2011	130	Suba	Migori	500	0	200	50	0		75.000
		Sub-Total		1.500	0	700	150	0	0	225.000
3-131-2011	131	Kieni West	Nyeri	1.000	0	200	50	0		100.000
3-132-2011	132	Kieni East	Nyeri	1.000	0	200	50	0		100.000
3--2011		Sub Total		2.000	0	400	100	0	0	200.000
	NAIROBI PROVINCE									
3-133-2011	133	Kasarani	Nairobi	200	100	100	15	0		30.000
3-134-2011	134	Langata	Nairobi	200	100	100	15	0		30.000
3-135-2011	135	Westlands	Nairobi	200	100	100	15	0		30.000
3-136-2011	136	Dagoreti	Nairobi	200	100	100	15	0		30.000
3-137-2011	137	Kamukunji	Nairobi	200	100	100	15	0		30.000
3-138-2011	138	Starche	Nairobi	200	100	100	15	0		30.000
3-139-2011	139	Embakasi	Nairobi	200	100	100	15	0		30.000
3-140-2011	140	Makadara	Nairobi	200	100	100	15	0		30.000
3-141-2011	141	Njiiru	Nairobi	200	100	100	15	0		30.000
		Sub Total		1.800	900	900	135	0	0	270.000
		GRAND TOTAL		129.100	19.700	33.600	7.035	720	6.800	16.570.000

Appendix 1-2 Sample documents for commodity Supply

LPO Date	LPO No.	Supplier	Commodity	Qnty	Total Amount	Date Released
01-Jul-10	Opening Balance	-			Amnt Kshs	
23-Sep-11	1258682	Microbit Systems		20,000	85.730.000	
23-Sep-11	1258695	Pisu & Co.		10,000	42.865.000	
23-Sep-11	1258689	B. N. Kotecha & Sons		20,000	145.000.000	
23-Sep-11	1258688	Unifresh Exotics		10,000	72.500.000	
23-Sep-11	1258690	Pabari Distributors		10,000	37.990.000	
16-Sep-11	1258663	Bell Industries		593	11.029.800	
23-Sep-11	1258687	Unifresh Exotics		20,000	145.000.000	
23-Sep-11	1258694	Pisu & Co.		10,000	42.865.000	
23-Sep-11	1258686	Unifresh Exotics		20,000	145.000.000	
23-Sep-11	1258693	Pisu & Co.		10,000	42.865.000	
23-Sep-11	1258692	Pisu & Co.		10,000	42.865.000	
23-Sep-11	1258669	Unifresh Exotics		30,000	215.500.000	
23-Sep-11	1258670	Unifresh Exotics		30,000	215.500.000	
23-Sep-11	1258672	B. N. Kotecha & Sons		10,000	72.500.000	
23-Sep-11	1258671	B. N. Kotecha & Sons		30,000	215.500.000	
23-Sep-11	1258680	Microbit Systems		20,000	85.730.000	
17-Aug-11	1258664	Incas Health International ltd		1,500	2.625.000	
23-Aug-11	1258665	Crosswise Kenya ltd		20,000	7.900.000	
22-Jul-11	1041295	Microbit Systems		30,000	116.325.000	
16-Aug-11	1258662	Bell Industries		907	16.870.000	
02-Aug-11	1041298	New KCC		5,464	19.998.240	
02-Aug-11	1041300	KMC ltd		10,000	38.400.000	
02-Aug-11	1041299	KMC ltd		10,000	38.400.000	

Date	Invoice	Supplier		Quantity	Amount	
02-Aug-11	1258651	KMC ltd		6,000	23.040.000	
22-Jul-11	1041292	Pisu & Co.		40,000	155.080.000	
18-Jul-11	1041280	Pisu & Co.		10,000	35.230.000	
18-Jul-11	1041283	Pisu & Co.		5,000	17.615.000	
22-Jul-11	1041293	Pisu & Co.		25,000	88.075.000	
02-Aug-11	1258652	Pabari Distributors		20,000	75.980.000	
02-Aug-11	1258653	Pabari Distributors		10,000	37.990.000	
08-Aug-11	1258659	Unifresh Exotics		40,000	290.000.000	
08-Aug-11	1258658	Unifresh Exotics		40,000	290.000.000	
18-Jul-11		Unifresh Exotics		10,000	52.660.000	
18-Jul-11		Unifresh Exotics		10,000	52.660.000	
18-Jul-11		Unifresh Exotics		10,000	52.660.000	
08-Aug-11	1258660	Unifresh Exotics		20,000	145.000.000	
08-Aug-11	1258661	Unifresh Exotics		10,000	72.250.000	
22-Jul-11	1041297	Microbit Systems		25,000	88.075.000	
TOTAL PURCHASES					3,335,273,040	

Appendix 1-3 District selection window for generation of allocation reports:
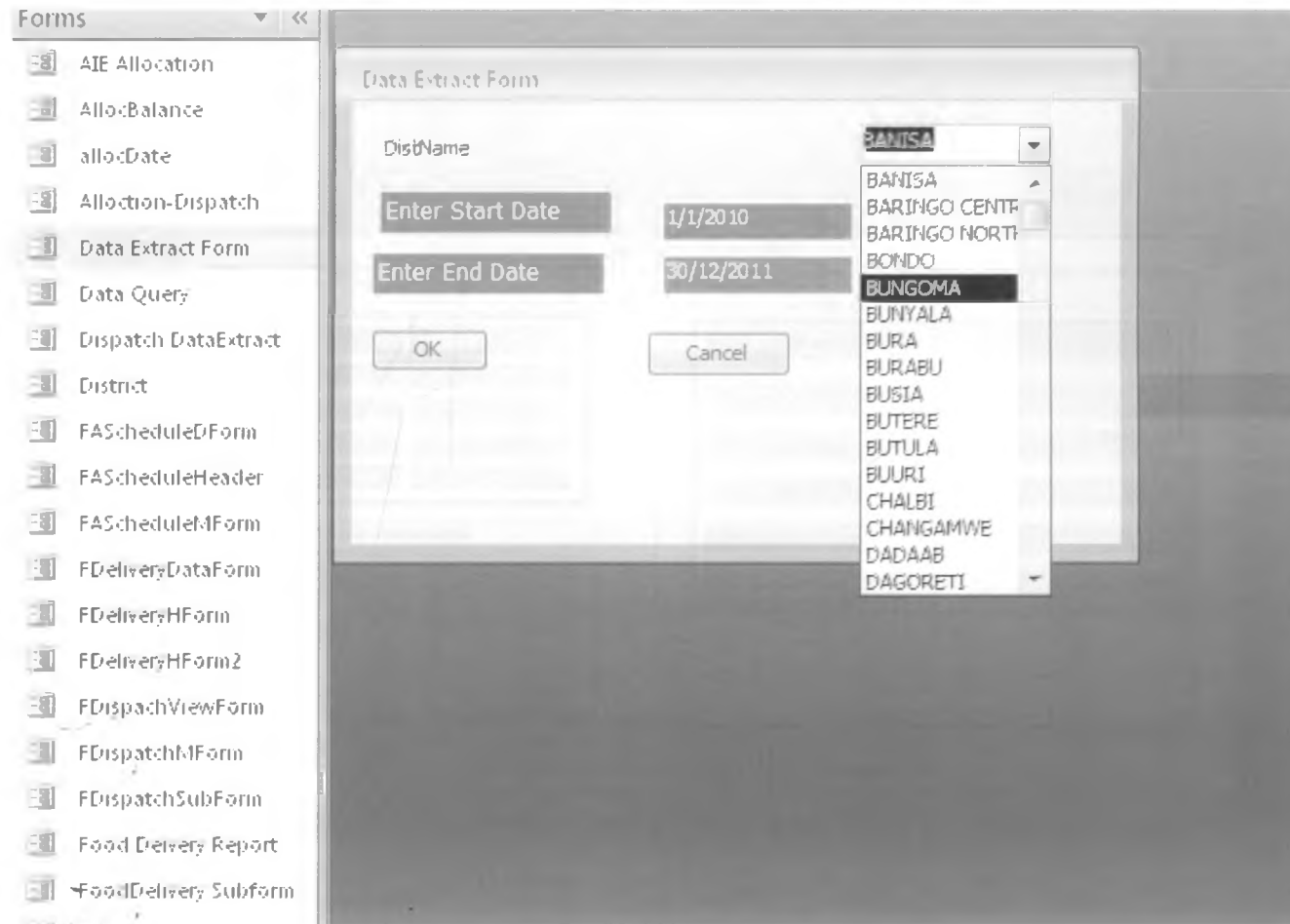
Appendix 1-4 Data capture screen for A.I.E
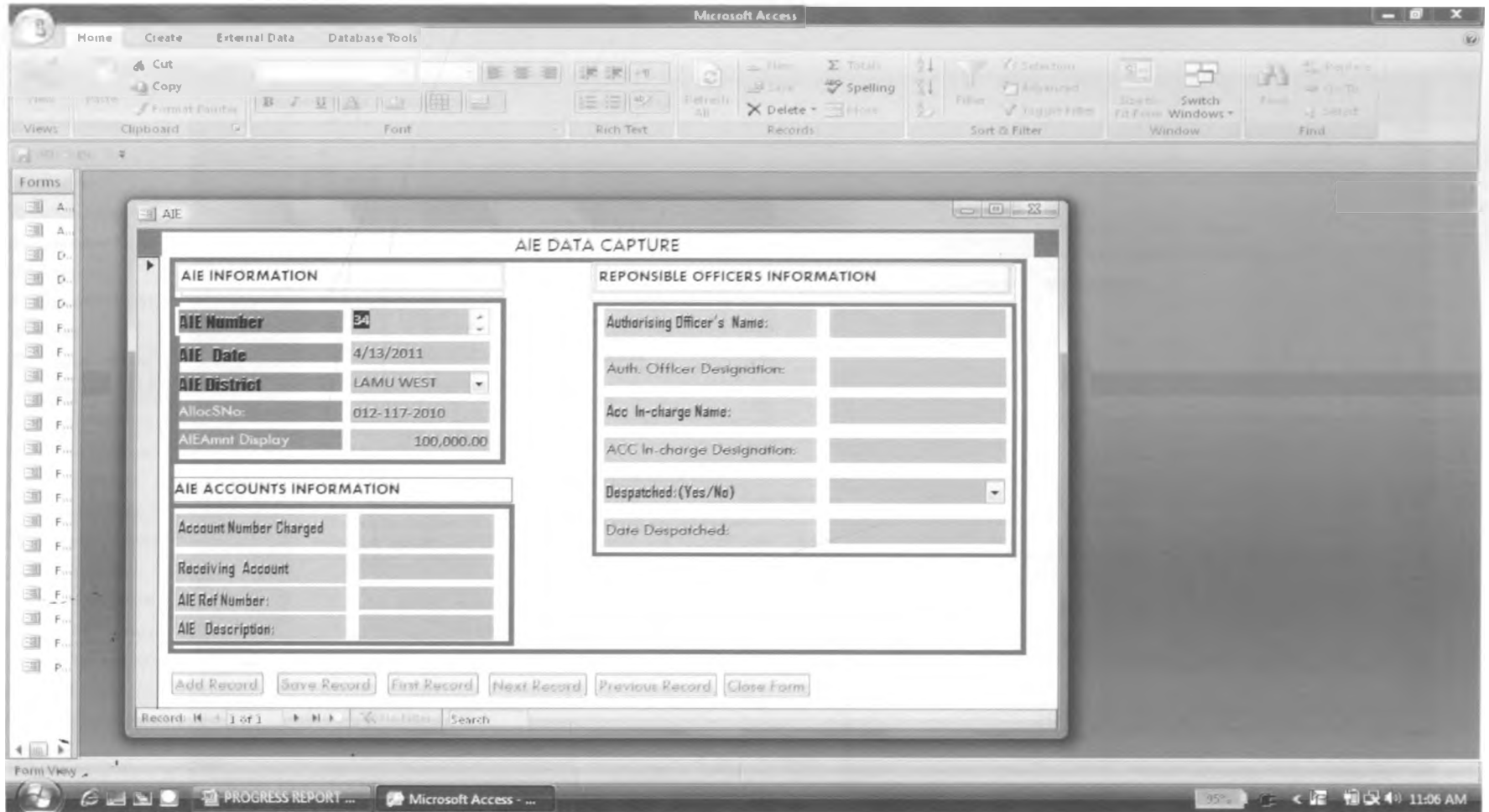
Appendix 1-5 Allocation Header Data Capture Form from the (extract from the prototype system design):

Appendix 1-6 Food Delivery Data Capture Form (extract from the prototype system design):

Forms ▼ «
AIE Allocation
AllocBalance
allocDate
Allocation-Dis ...
Data Extract F
Data Query
Dispatch Dat ...
District
FAScheduleD
FAScheduleH...
FAScheduleM...
FDeliveryData
FDeliveryHForm
FDeliveryHFor...
FDispatchVie...
FDispatchMF...
FDispatchSub...
Food Deliver...
FoodDelivery...
FoodDelivery2
·Province·Filte...

FOOD DELIVERY DATA CAPTURE SCREEN

	FDispatchNo		DriverPNO_IDN(		DespMilkPowder
	FAllocSNo		DespMaize90kg		DespRice
	DistCode		DesBeans90kg		DespPgPiece
			DespBeans50kg		AllocNo
	DespatchDate		DespVegOil		Biscuts
	TransporterName		DespUnimix		Nutrotap

Add Record   Next Record   Previous Record   Last Record

Food Delivery Form

DeliverySNo	FDelSNo	DelUnimix	DelUnimix	ReceiverName	ReceiverName
DispNo	FDespatchSNo	DelPgPiece	DelPgPiece	ReceiverDesign	ReceiverDesign
DeliveryDate	DelDate	DelNutrotap	DelNutrotap	ReceiverPNo	ReceiverPNo

Appendix 1-7 Relief Food Allocation Data Capture Screen (extract from the prototype system design):

RELIEF FOOD ALLOCATION MAIN DATA CAPTURE FORM

FAllocNoDetails

AllocNo	Dec-2010	AllocDate	16-Dec-10
AllocCategory	Normal Allocation	AllocDescription	
AllocSupportSource	Relief Operation		
FundingSource	GOK-MOSSP		

Add Record | Next Record | First Record | Previous Record | Last Record | Close Form

DATATA CAPTURE

AllocSNo	District	AllocNo	AllocPurpi	AllocStore	Maize 9	Beans 90	Beans 50	Vege	Unin	Milkp	Rice	Pgi	Nut	Biscu	AIEAmn
001-102-2010	KILIFI	Dec-2010	Vulnerable	Kilifi NCPB	500	0	200	100	0	0	200	0	0	0	50,000.00
002-126-2010	MATUGA	Dec-2010	Vulnerable	Kilifi NCPB	100	0	200	200	0	0	200	0	0	0	50,000.00
003-114-2010	KINANGO	Dec-2010	Vulnerable	Kilifi NCPB	500	0	200	100	0	0	200	0	0	0	50,000.00
004-116-2010	MSAMBUENI	Dec-2010	Vulnerable	Kilifi NCPB	500	0	200	100	0	0	200	0	0	0	50,000.00
005-109-2010	GANZE	Dec-2010	Vulnerable	Kilifi NCPB	500	0	200	100	0	0	200	0	0	0	50,000.00
006-110-2010	BAHARI	Dec-2010	Vulnerable	Kilifi NCPB	100	0	200	50	0	0	200	0	0	0	50,000.00
007-106-2010	MALINDI	Dec-2010	Vulnerable	Kilifi NCPB	200	0	200	50	0	0	200	0	0	0	50,000.00
008-121-2010	MAGARINI	Dec-2010	Vulnerable	Kilifi NCPB	300	0	200	100	0		200	0	0	0	100,000.00
009-105-2010	TANA RIVER	Dec-2010	Vulnerable	Kilifi NCPB	500	0	200	100	0	0	200	0	0	0	100,000.00
010-122-2010	BURA	Dec-2010	Vulnerable	Kilifi NCPB	500	0	200	100	0	0	200	0	0	0	100,000.00
011-123-2010	TANA DELTA	Dec-2010	Vulnerable	Kilifi NCPB	500	0	200	100	0	0	200	0	0	0	100,000.00
012-117-2010	LAMU WEST	Dec-2010	Vulnerable	Kilifi NCPB	500	0	200	100	0	0	200	0	0	0	100,000.00
013-101-2010	LAMU EAST	Dec-2010	Vulnerable	Kilifi NCPB	500	0	200	100	0	0	200	0	0	0	100,000.00
014-103-2010	TAITA TAVET	Dec-2010	Vulnerable	T Taveta NC	100	0	200	50	0	0	200	0	0	0	50,000.00
015-118-2010	MWATATE	Dec-2010	Vulnerable	Kilifi NCPB	200		200	50			200				
016-119-2010	WUNDANYI	Dec-2010	Vulnerable	Kilifi NCPB	200		200	50			200				
017-120-2010	VOI	Dec-2010	Vulnerable	Kilifi NCPB	500		200	100			200				
018-421-2010	NAIVASHA	Dec-2010	Vulnerable	Naivasha NC	100		100	50							
019-432-2010	RONGAI	Dec-2010	Vulnerable	Naivasha NC	200		100	50							
020-442-2010	TURKANA CE	Dec-2010	Vulnerable	Turukana NC	1000		300	100							
021-440-2010	TURKANA NC	Dec-2010	Vulnerable	Turukana NC	1000		300	100							
022-441-2010	TURKANA SO	Dec-2010	Vulnerable	Turukana NC	1000		300	100							
023-439-2010	TURKANA EA	Dec-2010	Vulnerable	Turukana NC	1000		300	100							
024-443-2010	TURKANA WI	Dec-2010	Vulnerable	Turukana NC	1000		300	100							

The above form is designed to generate reports for food dispatches while tying the dispatches with allocation.

Manual

user manual is for the operation of the Cmmodity Tracking System

es the procedures in the process of data capture from the stages of the system in a progresive manner. The
are: Allocation. Dispatch and delvery at the destinations.

ructure of the manual is as follows:

How to open the system
i. Tables present
Data Capture

Capturing data on allocation
Capturing data on dispatches
Capturing data on delivery

Reports
Reports on allocation
Report on dispatches
Report on delivery
Reports on allocation/dispatches
Report on dispatches/Delivery
Report on balances

How to open the system
At the desktop of the computer.
Locate and Click an Icon labelled CTS(Commodity Tracking System)
Once clicked, the databaase tables open as shownm below in appendix II-1
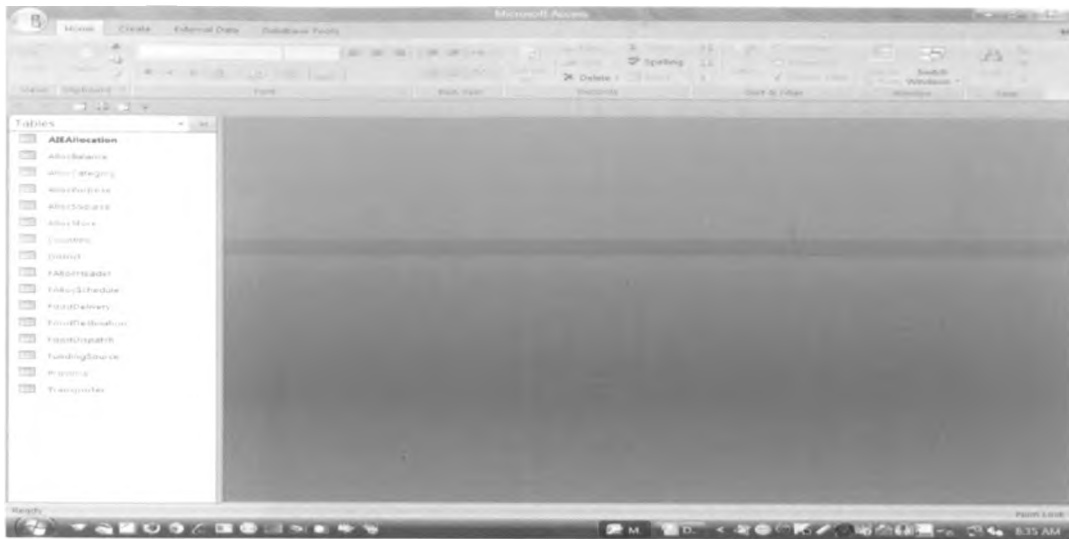
2. Data Capture

i. Capturing data on allocation
➤ From the diagram of appendix 1-1, of the data tables, click topmost labeld table
➤ A window of options of lebelled Form , Table, Query or Report will appear
➤ The window below will open and give several options which the user will click and pick from.

How to open form:

For the purpose of data capture, the user will open a list of forms and chose the one he/she wants to open.The option for the form is shown below tables as shown in the diagram.

➤ choose **Form** from the list below in order to open forms
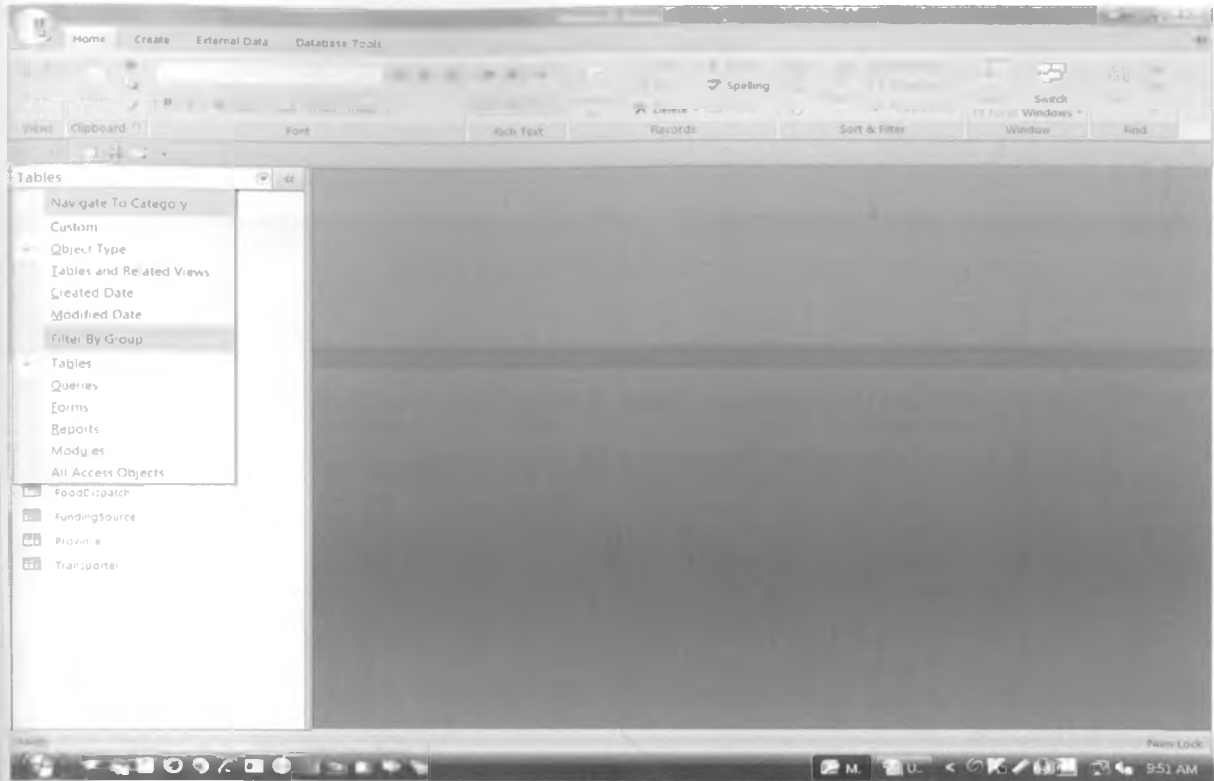
ii. **Opening** Allocation Data capture form.

The data capture begins with the allocation. Allocation has two forms where data is captured separetaely and then tied together at some point.The two forms are FAScheduleHeader and FAScheduleMForm.

➤ **Opening FAScheduleHeader(Food Allocation Schedule Header)**

From the forms. Click FAScheduleHeader form

➤ **Capturing data in FAScheduleHeader (Appendix 1-3)**

FAScheduleHeader captures data for the allocation header. These are data from manual allocation form which is formatted in the same order.The fields in the form are explained as folows:

➤ Allocation number   - This Date by month and year when the allocation is done
➤ Allocatetion category - lookup field giving catergory/types of allocation
➤ Allocation support source- gives the type of suppot i.e donation, relief etc
➤ Funding source – gives the source of funding i.e GOK or other donors
➤ Allocation date- Gives the date on which allocation was signed/authorised

The data captured in the header form are periodic data which are captured once for all allocation schedule of one month. Once data is captured, it is transfered to the main data capture form (FAScheduleForm) as header for that form where main allocation data is captured.

Appendix II- 4
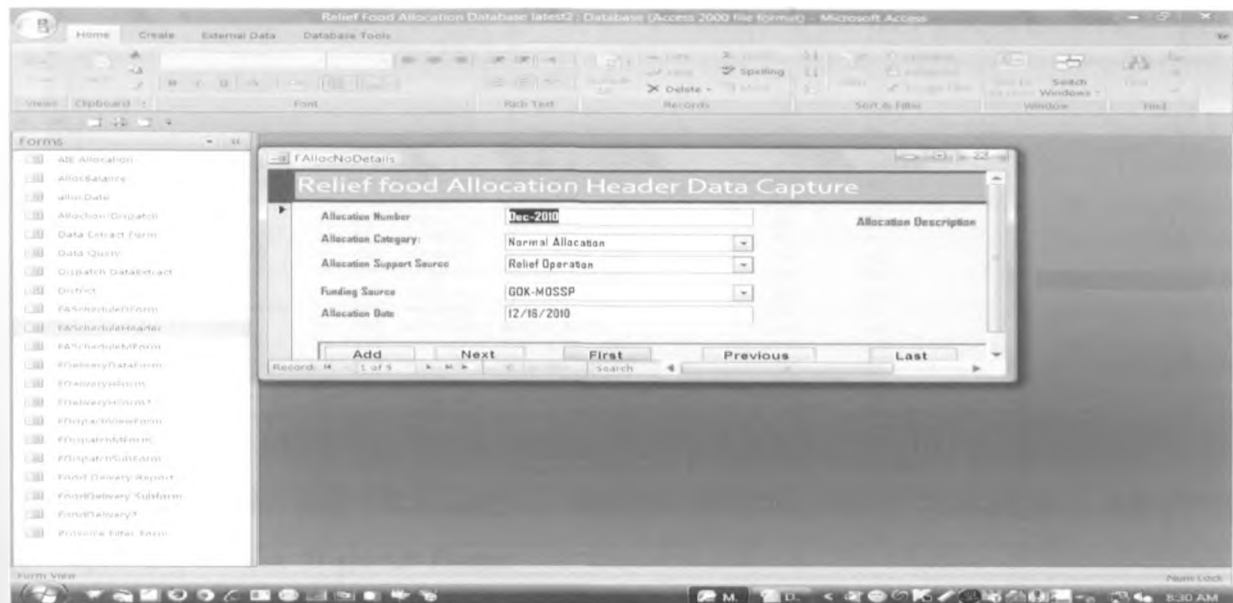
ii.   Capturing Data in Main allocation database (Appendix 1-4)

Fields considered in the main allocatiion table:

- AllocSNo – Serail number tied to all allocation at ago for agiven district.
- District- The district where allocation is going
- AllocNo – this is the same number fromm the header being trasported as allokup here
- AllocStore- the store where the items being allocated for that district are picked from
- The rest of the fields refere to items being alcated in terms of quantity i.e Maize and beans

FAllocNoDetails

RELIEF FOOD ALLOCATION MAIN DATA CAPTURE FORM

AllocNo	Dec 2010	AllocDate	16-Dec-10
AllocCategory	Normal Allocation	AllocDescription	
AllocSupportSource	Relief Operation		
FundingSource	GOK-MOSSP		

| Add Record | Next Record | First Record | Previous Record | Last Record | Close Form |

DATA CAPTURE

AllocSNo	District	AllocNo	AllocPurpo	AllocStore	Maize 9(	Beans 90	Beans 50	Veget	Unim	Milkpo	Rice	PgP	Nutro	Be
014 101 1210	109	Dec 2010	Vulnerable	Kilifi NCPB	500	0	200	100	0	0	200	0	0	0
007 110 1210	BAHARI	Dec 2010	Vulnerable	Kilifi NCPB	100	0	200	50	0	0	200	0	0	0
068 214 1210	BANISA	Dec 2010	Vulnerable	Garissa NCPB 0			300	100						
045-450-1210	BARINGO CEN	Dec 2010	Vulnerable	Baringo NCPB 500		0	200	50	0	0	0	0	0	0
044 449 1210	BAHINGO NOI	Dec 2010	Vulnerable	Baringo NCPB 500		0	200	50	0	0	0	0	0	0
126 503 1210	BONDO	Dec 2010	Vulnerable	Bondo NCPB 300			120	50						
078 701 1210	BUNYALA	Dec 2010	Vulnerable	Kakamega NCPB 400			100	30						
011-122-1210	BURA	Dec-2010	Vulnerable	Kilifi NCPB	500	0	200	100	0	0	200	0	0	0
072 706 1210	BUSIA	Dec 2010	Vulnerable	Busia NCPB	200		50	30						
074 711 1210	BUTULA	Dec-2010	Vulnerable	Bungoma NC 100			50	40						
087 352 1210	CHALBI	Dec 2010	Vulnerable	Wajia NCPB 1000			300	100						
115-802-1210	DAGORETI	Dec 2010	Vulnerable	Nairobi NCPB 200			50	30			100			
056 215 1210	ELDAS	Dec 2010	Vulnerable	Garissa NCPB 0			300	100						
123 809 1210	EMBAKASI	Dec 2010	Vulnerable	Nairobi NCPB 200			50	30			100			
055 206 1210	FAFI	Dec 2010	Vulnerable	Garissa NCPB 0			300	100						
006-109-1210	GANZE	Dec-2010	Vulnerable	Kilifi NCPB	500	0	200	100	0	0	200	0	0	0
043 316 1210	GARBA TULLA	Dec 2010	Vulnerable	Mulo NCPB	1000	0	200	50	0	0	0	0	0	0
095 316 1210	GARBA TULLA	Dec 2010	Vulnerable	Isiolo NCPB	300		100							
054 201 1210	GARRISSA	Dec 2010	Vulnerable	Garissa NCPB 0			300	100						
139-608-1210	GATANGA	Dec-2010	Vulnerable	Thika NCPB 400			150	50						
138 613 1210	GATUNDU NC	Dec 2010	Vulnerable	Thika NCPB 400			150	50						
137 625 1210	GATUNDU SO	Dec 2010	Vulnerable	Thika NCPB 400			150	50						
054 403 1210	GILGIL	Dec 2010	Vulnerable	Nakuru NCPB 200			50	50						

iii. Capturing data in Dispatch Form:

When capturing data in the commodity dispatch form, the fields captured in the allocation become header in the dispatch data capture form. Thus the dispatch form will have the following fields as header.

➤ AllocSNo – Serail number tied to all allocation at ago for agiven district.
➤ District- The district where allocation is going
➤ AllocNo – this is the same number fromm the header being trasported as allokup here
➤ AllocStore- the store where the items being allocated for that district are picked from
➤ The rest of the fields refere to items being alcated in terms of quantity i.e Maize and beans

In the dispatch form, the records showm on the screen are only those records from one allocation whoes deatails are indicated in the header of the sceen . Thus the allocation and dispatches from it are tied by allocation serial number. When you scroll the screen, you will see again only those dispatches from a specific allocation number.

Main field considered in the Dispatch form will have the following fields:

➤ FdispatchNo – Serial number for every dispatch released per district(every dispatch is serialised)
➤ FAllocSNo – Serail No of food allocation, carried over from allocation form
➤ DistCode – Code of the district where dispatch goes to
➤ AllocLetterDate – Date on which the allocation letter inşstructing

- ➤ Dispatched — Date at which the
- ➤ Fields of Items dispatched by their packaging
- ➤ TrasporterCategory — identification of category of transporter i.e G.O.K or Private
- ➤ TransporterName — Name of the trasporter, wheather Government or private
- ➤ LoaderName - The person who loads the commodity on to the vehicle
- ➤ LoaderDesignation — Designation of the loader
- ➤ DriverID/PNo - Driver ID or Personal Number
- ➤ VehicleRegNo - Registarion Number

The list of dispatch indicated below has got three dispatches which have been dispatched from one allocation serail number. If the user roles down the by using previous and netxt. it will show other dispaeches from other allocation .

Appendix II- 6

) Viewing of data captured at dispatch

Appendix 6 presents data so far dispatched from the allocation.
To get this view, click FDispachViewForm from the list of forms.

RELIEF FOOD INFORMATION SYSTEM: FOOD DISBURESEMENT /DISPATCH DATA CAPTURE

LeaderNai	LeaderDesign	VehicleRegNe	TransporterCatego	TransporterName	DriverPNO_IDNa	Bea	DespBa	DespVegOi	DespNumia	DespMikPow	DespMaize90kg	DespRica	Nutrog
Mark Deono	Proc Officer	GK 675R	Government	MOSSP	9087	0	100	50	0	0	200	0	0
Rene Ngotoch	Proc Officer	GK 453E	Government	NYS	7865	0	0	50	0	0	200	100	0
Tom	Clerk	GK 459W	Government	MOSSP	986543	0	100	0	0	0	100	100	0
Erick Atem	Clerk	KAQ 34SW	Contractor	Tarmad	67543	0	23	0	0	0	23	0	0
kasuku Koki	Clerk	GK 654A	Government	MOSSP	987654	0	400	0	0	0	400	0	0
Akocho Gmee	Cleark	GK 8978	NYS	87654	0	100	100	0	0	100	100	0
Mbalute georg	Cleark	GK 67540	Government	MOSSP	90876	0	100	100	0	0	100	100	0
Jacko	Clerk	GK 453W	Government	MOSSP	9876	0	100	50	0	0	200	0	0
Jacko	Clerk	GK 453W	Government	MOSSP	9876	0	100	50	0	0	300	0	0
Ohach Fred	Clerk	KAT 6754E	Contractor	Tarmad	9876	0	100	50	0	0	400	100	0
Tom Mbarack	Clerk	KAV 765T	Contractor	Tarmad	8976	0	100	50	0	0	100	100	0
Erick Jack	Sub staff	GK 3420	Government	MOSSP	9876	0	100	50	0	0	300	100	0
Paty Sora	Sub Staff	GK 564W	Government	MOSSP	8765	0	100	50	0	0	200	100	0
Erick Nyamay	Clerk	GK 654R	Government	NYS	9876	0	100	0	0	0	100	100	0
patrick Maga	Clerk	GK 564W	Government	MOSSP	8765	0	100	0	0	0	100	100	0
Mbata sate	Clerk	GK 453W	Government	MOSSP	9087	0	0	0	0	0	100	100	0
Jackson Dote	Clerk	GK 564S	Government	MOSSP	543	0	0	0	0	0	100	100	0
Peman Akach	Proc Officer	GK 675T	Government	MOSSP	98765	0	100	50	0	0	200	100	0

iv. Delivery data capture form

When the commodities reach the destination, Data is given captured to give quantity of the items which have been delivered. This includes item names and their quantities. The data capture in these cases is a repetition of the data dispatched unless there is a slight variation in terms of quantity. Where the quantity does not tally, it is the quantity delivered which is recorded. For the delivery scheme, the one record of dispatch becomes the heading, giving details of that dispatch. In this case, the screen will display only that delivery from one particular dispatch. If a dispatch was twice, the screen will show the two cases and if a dispatch was delivered once, the screen will show that case only.

The data delivery includes the following fields:

- DelSNo   – Serial number for every dispatch released per district(every dispatch is serialised)

- FAllocSNo   – Serail No of food allocation, carried over from allocation form
- DistCode   - Code of the district where dispatch goes to
- AllocLetterDate   - Date on which the allocation letter insructing
- Dispatched   – Date at which the
- Fields of Items dispatched by their packaging
- TrasporterCategory   – identification of category of transporter i.e G.O.K or Private
- TransporterName   – Name of the trasporter, wheather Government or private

- ➤ LoaderName   - The person who loads the commodity on to the vehicle
- ➤ LoaderDesignation   – Designation of the loader
- ➤ DriverID/PNo   - Driver ID or Personal Number
- ➤ VehicleRegNo   - Registarion Number

Appendix II- 8

FOOD DELIVERY DATA CAPTURE SCREEN

Deliv.	DlspNo	District	DeliveryD	DelMaize90	DelBeans90l	DelBeans50K	DelMilkPowd			DelUnimix	
176	2	192	12/15/2010	300	400	0	0	0	0	0	0
(New)	2										

3. Reports

The system generates various reports key among them are: Allocation report, Dispatch Report and Delivery Report.

- To go to the report, choose report as one of the options presented when the system opens
- Click report
- Chose the report you want view

Each of these reports is explained below:

i.   Allocation Report:
- After opening the report menu indicated below in appendix 1-8
- Locate and Click – Food allocation

Appendix II-9
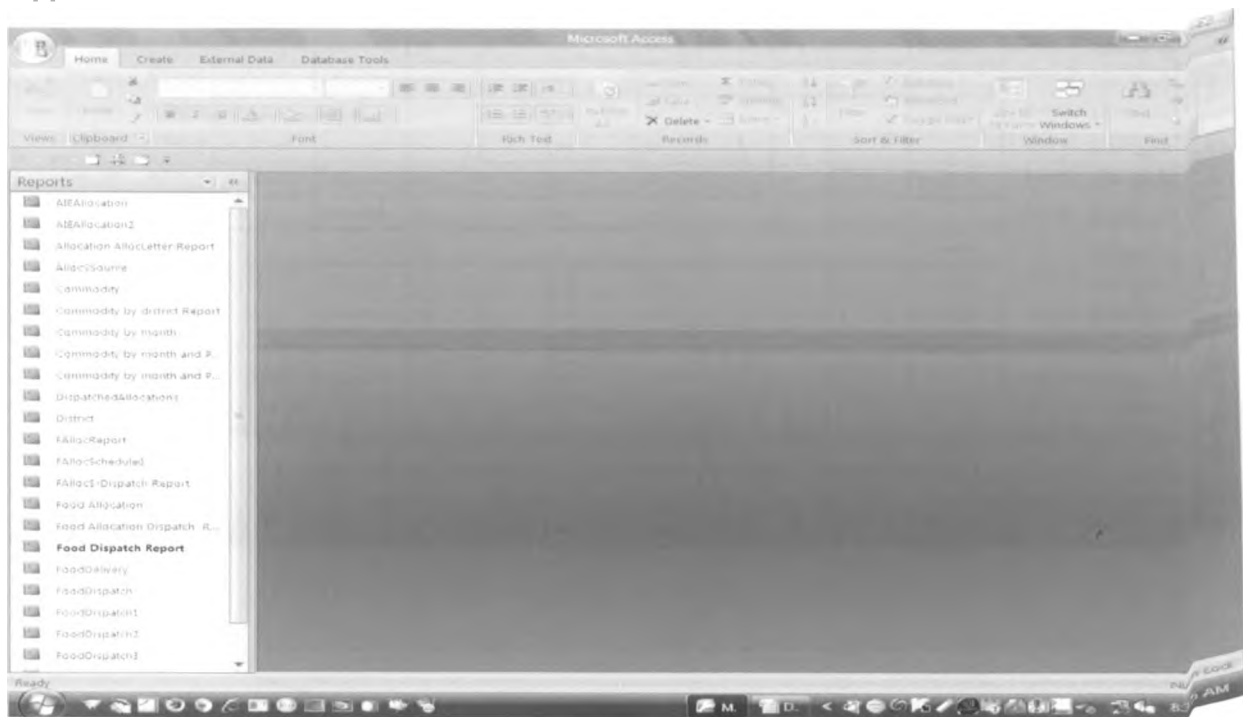
- The allocation report in figure 1-9 shows the food allocation for the Month of December, 2010. The approval date of this allocation which was 16th of December, 2010 is also included in the report as the first column allocation.

Appendix II-10

FOOD ALLOCATION REPORT

AllocNo	AllocDate	District	AllocSNo	MaizegoKg	Beans50kg	Beans50kg	VegOil	Unimix	Biscuts	Nutropup	AfEAmnt	AllocCategor	AllocPurpos	TargetG
Dec-2010	16-Dec-10	109	014-101-1210	500	0	200	100	0	0	0	100,000.00	Normal /	Relief Opera	Vulner
Dec-2010	16-Dec-10	KILIFI	001-102-1210	500	0	200	100	0	0	0	50,000.00	Normal /	Relief Opera	Vulner
Dec-2010	16-Dec-10	TAITA TAVET	015-103-1210	100	0	200	50	0	0	0	50,000.00	Normal /	Relief Opera	Vulner
Dec-2010	16-Dec-10	TANA RIVER	010-105-1210	500	0	200	100	0	0	0	100,000.00	Normal /	Relief Opera	Vulner
Dec-2010	16-Dec-10	MALINDI	008-106-1210	200	0	200	50	0	0	0	50,000.00	Normal /	Relief Opera	Vulner
Dec-2010	16-Dec-10	GANZE	006-109-1210	500	0	200	100	0	0	0	50,000.00	Normal /	Relief Opera	Vulner
Dec-2010	16-Dec-10	BAHARI	007-110-1210	100	0	200	50	0	0	0	50,000.00	Normal /	Relief Opera	Vulner
Dec-2010	16-Dec-10	MATUGA	002-114-1210	100	0	200	200	0	0	0	30,000.00	Normal /	Relief Opera	Vulner
Dec-2010	16-Dec-10	KINANGO	004-115-1210	500	0	200	100	0	0	0	50,000.00	Normal /	Relief Opera	Vulner
Dec-2010	16-Dec-10	MSAMBUENI	005-116-1210	500	0	200	100	0	0	0	50,000.00	Normal /	Relief Opera	Vulner
Dec-2010	16-Dec-10	MWATATE	016-118-1210	200		200	50					Normal /	Relief Opera	Vulner
Dec-2010	16-Dec-10	MWATATE	027-413-1210	1000	0	300	100	0	0	0	50,000.00	Normal /	Relief Opera	Vulner
Dec-2010	16-Dec-10	WUNDANYI	017-119-1210	200		200	50					Normal /	Relief Opera	Vulner
Dec-2010	16-Dec-10	WUNDANYI	028-414-1210	100	0	50	50	0	0	0	50,000.00	Normal /	Relief Opera	Vulner
Dec-2010	16-Dec-10	VOI	018-120-1210	500		200	100					Normal /	Relief Opera	Vulner
Dec-2010	16-Dec-10	VOI	029-423-1210	100	0	50	50	0	0	0	50,000.00	Normal /	Relief Opera	Vulner
Dec-2010	16-Dec-10	MAGARINI	009-121-1210	300	0	200	100	0	0	0	100,000.00	Normal /	Relief Opera	Vulner
Dec-2010	16-Dec-10	BURA	011-122-1210	500	0	200	100	0	0	0	100,000.00	Normal /	Relief Opera	Vulner
Dec-2010	16-Dec-10	TANA DELTA	012-123-1210	500	0	200	100	0	0	0	100,000.00	Normal /	Relief Opera	Vulner
Dec-2010	16-Dec-10	GARRISSA	054-201-1210	0		300	100					Normal /	Relief Opera	Vulner

FoodDispatch3

Report View

85

i. Commodity Dispatch Report
- From the report drop down menu,
- Click food dispatch report
- The window of the report below will(appendix 1-9) surface:

The report gives information on the following:

Food dispatch serial Number where the commodity is drawn from

- Food dispatch serial Number where the commodity is dispatched from.
- Dispatch Serial Number of the commodity
- District code where commodity is dispatched to
- Dispatch Letter date on which the dispatch was authorized
- Date in which the commodity was dispatched
- Other areas include the items dispatched in the report.

Appendix II-11

i.   Commodity Delivery Report
➤ Choose the report again
➤ Click the Food Allocation Dispatch Report
➤ The report with the window in appendix (1-10) below will surface

The report combines allocation and dispatch as follows:

➤ District – district to which the commodity was allocated
➤ AllocSNo- The serial number of allocation for the record in question
➤ AllocDate- Date on which the allocation was done
➤ Dispatch number – Serial number of the dispatch
➤   DispatchDate- The date when the dispatch was made
➤ Item details

Appendix II-12

Explanation of key parameters in the report:

Generation of allocation serial number: the allocation serial number is a composite key in the database. For allocation number of 100-102-2010, the first number 100 indicates the number of the record of allocation for Kilifi in that particular batch of allocation, 102 indicates district code number for kilifi while 2010 indicate the year on which the allocation was done.

Other important aspect of the report include parameters such A letter date indicating the date the allocation was approved, LoaderName indication the name of the person who loaded the dispatch, LoaderDesign indication the designation of the loader. Other components of this report include the vehicle registration and the transporter details. Using all these parameters, the report can provide an audit trail to assist should the food dispatched get lost on the way. The above report was an extract pasted to a word document for the purpose of explanation and therefore was not complete. The full report is presented below as annex i. Other sample reports from the software are presented below:

Appendix III Analysis of Required Work for the System

Based on data obtained from the Ministry of state for Special Programmes, the research analyzed manual data with a view to identifying the following: Quantity of each food item purchased per year over the period of five years (2005 to 2011), its monetary value and amount of A.I.E disbursed to cater for its distribution over the same year. The total of the above value is presented as a grand total n the tables below: The first table below shows that the government spends about Kshs. 6,000,000 every year on relief food while the second table gives no. of transactions expected for this work.

Appendix III-1 Value of Relief food allocated over various years(2005 to 2011):

No	Item	Qnty2005/2006	Qnty 2006/2007	Qnty 2007/2008	Qnty 2008/2009	Qnty 2009/2010	Qnty 2010/2011
1	Maize 90 kg	3.573.227.280	510.394.080	470.000	1.445.780	997.440	925.282
2	Beans 90 Kg	342.459.060	226.446.237	27.863	76.164	79.323	20.860
3	Beans 50 Kg	517.878.720	115.698.775	90.779	115.060	102.476	336.851
4	Vegoili	571.662.336	222.725.580	87.605	72.584	98.192	88.251
5	Rice 50 Kg	751.959.700	959.608.300	99.910	329.212	309.293	399.515
6	Unimix	6.421.050	0	0	0	0	0
7	Milk Powder	415.995.120	94.877.856	0	0	0	13.771
8	Peogion piece	33.055.300	1.903.000	0	0	0	2.110
7	Green Gram	0	6.840.000	0	0	0	0
8	Nutropup	0	14.524.272	0	0	0	6.549
9	Maize Floor	0	0	56.948	0	0	0
10	Tea Leaves	0	0	52.608	0	0	3.518
11	Biscuits	0	0	0	0	0	0
12	Amaranth	0	0	0	0	0	0
Total	Food Value	6.212.658.566	2.153.018.100	1.508.004.278	3.840.881.888	4.759.957.046	5.331.768.166
Total	AIE Value	266.336.108	133.258.805	113.644.275	0000000000	263.266.463	136.249.000

| | G-Total | 6.478.994.674 | 2.286.276.905 | 1.621.648.553 | 3.840.881.888 | 5.023.223.509 | 5.468.017.166 |

Appendix III-2 No. of districts which received monthly food for the year 2010/2011

	Month	Districts Receiving food	Transactions at allocation level	Est. Transactions at Disburs. level	Transactions at Delivery Level	Transactions at AIE Disbursement level	Est. No of Records
1.	Jul. 2010	28	28	112	112	28	168
2.	Aug. 2010	58	58	232	232	58	580
3.	Sep. 2010	28	28	112	112	28	280
4.	Oct. 2010	147	147	588	588	147	1470
5.	Nov. 2010	0	0	0	0	0	0
6.	Dec. 2010	156	156	632	632	156	1576
7.	Jan. 2011	119	119	476	476	119	1190
8.	Feb. 2011	122	122	488	488	122	1220
9.	Mar. 2011	128	128	512	512	128	1288
10.	Apr. 2011	144	144	576	576	144	1288
11.	May. 2011	102	102	808	808	102	1820
12.	Jun. 2011	105	105	420	420	105	870
	Total	1137	1137	4956	4956	1137	11.750

Appendix IV – Sample Codes

Source Codes For Access Database

```
Option Compare Database
Private Sub Command14_Click()
On Error GoTo Err_Command14_Click

    DimstDocNameAsString
    Dim stLinkCriteria As String
    stDocName = "Allocaction Display"
    DoCmd.OpenForm stDocName, , , stLinkCriteria

Exit_Command14_Click:
    Exit Sub

Err_Command14_Click:

    MsgBox Err.Description
    Resume Exit_Command14_Click

End Sub
Private Sub Command15_Click()
On Error GoTo Err_Command15_Click

    Dim stDocName As String
    Dim stLinkCriteria As String
    stDocName = "Allocaction Display"
    DoCmd.OpenForm stDocName,
    , stLinkCriteria

Exit_Command15_Click:
    Exit Sub

Err_Command15_Click
    MsgBox Err.Description
    Resume Exit_Command15_Click

End Sub
Private Sub Command16_Click()
On Error GoTo Err_Command16_Click

    DoCmd.GoToRecord , , acNext

Exit_Command16_Click:
    Exit Sub


Err_Command16_Click:
```

```php
echo "<div class=\"intro\"><table id=\"rounded-corner\" border='0' width='100%'
bgcolor='#C3D1FF'><tr><th>#</th><th>Code </th><th>Purpose </th></tr>";

$n=1;
while($row=mysql_fetch_assoc($result)){

echo "<tr onmouseover=\"this.bgColor='#ccccbb';\" onmouseout=\"this.bgColor='#C3D1FF';\"
onclick=\" document.frmallocsources.code.value='".$row['SourceCode']."'";
document.frmallocsources.stype.value='".$row['SType']."';\"><td>".$n."</td>
<td>".$row['SourceCode']."</td><td>".$row['SType']."</td></tr>";
$n=$n+1;
    }
echo "</table></div>";
?>
    </div>
    </p>
    </div>
    </div>
<input type="button" value="Allocation Sources" id="opensources"></p>
<script language="javascript">
function sourcesave()
{
var code=document.frmallocsources.code.value
var stype=document.frmallocsources.stype.value
 xmlHttp=GetXmlHttpObject()
if (xmlHttp==null)
{
alert ("Browser does not support HTTP Request")
return
}
var url="includes/ajaxphp/sourcesave.php"
url=url+"?code="+code+"& stype="+stype

url=url+"&sid="+Math.random()

xmlHttp.onreadystatechange=stateChanged

xmlHttp.open("GET",url,true)
xmlHttp.send(null)
thehint="sourchint";
document.frmallocsources.reset();
}
function sourcedel()
{
var code=document.frmallocsources.code.value
```

```
xmlHttp=GetXmlHttpObject()
if (xmlHttp==null)
{
alert ("Browser does not support HTTP Request")
retur
}
var url="includes/ajaxphp/sourcedel.php"
url=url+"?code="+code
url=url+"&sid="+Math.random()
xmlHttp.onreadystatechange=stateChanged
xmlHttp.open("GET",url,true)
xmlHttp.send(null)
thehint="sourcehint";
document.frmallocsources.reset();
    }
</script>
Food Dispatch code
<?php
require_once('DbConnector.php');
$connector = new DbConnector();
    ?>
<input type="button" value="New Dispatch"
onclick="window.open('newdispatches.php','mywindow','width=500,height=750')">

    <div id="dispfieldshint">
<div class="intro"><form name='frmdisp'> <table><tr><td>Dispatch Code</td><td> <input
type="text" name='dispcode'></td><td width='150'></td></tr>

    <tr><td>Allocation S/N.</td><td><select name='alloccode'
onchange="dispfields();"><option></option>
        <?
$query="SELECT alloccode from districtpopulation";
$result=$connector->query($query);
while($row=mysql_fetch_assoc($result)){
echo "<option>".$row['alloccode']."</option>";
}
    ?>
</tr>
<tr><td>District</td><td><select name='district'><option></option>
    <?
$query="SELECT DistName from districts";
$result=$connector->query($query);
while($row=mysql_fetch_assoc($result)){
echo "<option>".$row['DistName']."</option>";
}
?> </td>   </tr>
```

```html
    <tr><td>Purpose</td><td> <input type="text" size='30' name='purpose'></td>
<td rowspan=4>




<!-- =============================================== Code for Search
=========================================== -->
<h3>Filter Dispatches</h3> <table width="100%"
 <tr>
 <td>By Allocation Code<input type="checkbox" name="chkalloccode" ></td>
 <td>Allocation Code</td>
 <td><input type="text" size="20" name='salloccode' onKeyUp="dispsearch();"></td>
 <td>By District<input type="checkbox" name="chkdistrict" ></td>
 <td>District</td>
 <td><select name='sdistrict'><option></option>
 <?
  $query="SELECT DistName from districts";
$result=$connector->query($query);
while($row=mysql_fetch_assoc($result)){
echo "<option>".$row['DistName']."</option>";

}
    ?> </td>
</tr>
<tr>
  <td> </td>
  <td> </td>
  <td> </td>
  <td> </td>
</tr>
<tr><td><input type="button" value="Search" onclick="dispsearch();"><input type="button"
value="Search and Print" onclick="dispsearchprint();"><input type="button" value="Print
Balances" onclick="dispsearchprintbal();"></td></tr>
</table>
```

```
<!-- ============================================= End of Code for Search
============================================= -->
        </td></tr>
                        <tr><td>Transporter</td><td> <input type='text' size='30'
name='transporter' value=''></td></tr>
                         <tr><td>Vehicle Registration</td><td> <input type='text' size='30'
name='vehicle' value=''></td></tr>
                        <tr><td>Driver Name</td><td> <input type='text' size='30' name='driver'
value=''></td></tr>
<tr><td>Store</td><td> <input type="text" size='30' name='store'></td></tr>
</select></td>   </tr></table></form></div>
        </div>
<div id="disphint">
<table id='rounded-corner' width="100%">

<tr><th>No</th><th>Dispatch Code</th><th>Allocation Code</th><th>Item</th>
<th>Quantity</th><th>Date</th><th>District</th><th>Purpose</th><th>Transporter</th><th>
Driver</th><th>Vehicle</th></tr>

<?
$query="SELECT * from itemsdispatch";
$result=$connector->query($query);
$n=1;
while($row=mysql_fetch_assoc($result)){
echo
"<tr><td>".$n."</td><td>".$row['dispcode']."</td><td>".$row['alloccode']."</td><td>".$row['item'].</
td>
<td>".$row['quantity']."</td><td>".$row['date']."</td><td>".$row['district']."</td><td>".$row['purpo
."</td><td>".$row['transporter']."</td><td>".$row['driver']."</td><td>".$row['vehicle']."</td></tr>";
$n=$n+1;
}  ?>
</table>
        </div>
<script language="javascript">
function disppages(str)
{
xmlHttp=GetXmlHttpObject()
if(xmlHttp==null)
{
alert ("Browser does not support HTTP Request")
return
}
var url="includes/ajaxphp/disppages.php"
url=url+"?page="+str
url=url+"&sid="+Math.random()
xmlHttp.onreadystatechange=stateChanged
xmlHttp.open("GET",url,true)
```

```
xmlHttp.send(null)
thehint="disphint";
}
function dispsearch()
{
var salloccode=document.frmdisp.salloccode.value;
var sdistrict=document.frmdisp.sdistrict.value;
xmlHttp=GetXmlHttpObject()
if(xmlHttp==null)
{
alert ("Browser does not support HTTP Request")
return
}
var url="includes/ajaxphp/dispsearch.php"
url=url+"?salloccode="+salloccode
if(document.frmdisp.chkdistrict.checked==1){
url=url+"& sdistrict="+sdistrict
}
url=url+"&sid="+Math.random()
xmlHttp.onreadystatechange=stateChanged
xmlHttp.open("GET",url,true)
xmlHttp.send(null)
thehint="disphint";
}
function dispsearchprint()
{
var salloccode=document.frmdisp.salloccode.value;
var sdistrict=document.frmdisp.sdistrict.value;
var url="includes/dispsearchprint.php"
url=url+"?salloccode="+salloccode
if(document.frmdisp.chkdistrict.checked==1){
url=url+"&sdistrict="+sdistrict
}
url=url+"&sid="+Math.random()
window.open(url,'mywindow','width=1000,height=750')
}
function dispsearchprintbal()
{
var salloccode=document.frmdisp.salloccode.value;
var sdistrict=document.frmdisp.sdistrict.value;
var url="includes/dispsearchprintbal.php"
url=url+"?salloccode="+salloccode
if(document.frmdisp.chkdistrict.checked==1){

url=url+"&sdistrict="+sdistrict
}
url=url+"&sid="+Math.random()
window.open(url,'mywindow','width=1000,height=750')
```

```
}
function dispatch()
{
var dispcode=document.frmdisp.dispcode.value
var alloccode=document.frmdisp.alloccode.value
var district=document.frmdisp.district.value
var purpose=document.frmdisp.purpose.value
var transporter=document.frmdisp.transporter.value
var vehicle=document.frmdisp.vehicle.value
var driver=document.frmdisp.driver.value
var store=document.frmdisp.store.value
```

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Ministry of Special Programmes: Relief Food Managment

Allocations

Dispatches

Stores

Set Up

Users