

**THE EFFECT OF LAST MILE MOBILE SOLUTION
SOFTWARE ADOPTION ON FOOD AID DISTRIBUTION BY
WORLD VISION IN MAKUENI SUB-COUNTY, MAKUENI
COUNTY, KENYA**

BY

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DECLARATION

This research project report is my original work and has never been presented for a degree award in any other university.

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DEDICATION

This research project report is dedicated to my son Darren, my father Sheldon, my late mother Jane, my niece Primerose and my brother Moses for their inspiration, support and understanding during the period of my study.

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First I thank the Almighty God who gave me strength, provision and kindness over my life. I am grateful to my family and friends for their support. The project report would have been in vain without the scholarly guidance, critiques and advice from Dr. Jonathan M. Mwanja, my research supervisor.

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ABSTRACT

The purpose of this study was to assess the effect of Last Mile Mobile Solution (LMMS) on food aid distribution by World Vision in Makueni Sub-County, Makueni County, Kenya. This research was guided by the following objectives; to establish the effect of LMMS registration on distribution of food aid, to assess the effect of LMMS accountability on distribution of food aid, and to establish the influence of LMMS harmonization on distribution of food aid in Makueni Sub-County. The study targeted 830 households receiving food aid and 20 World Vision staff working in Makueni Sub-County. Simple random sampling technique was used in the study to select 85 respondents. The information for the study was gathered by use of questionnaires as the main research instrument. The questionnaires were subjected to the heads of households and a key informant one to the World Vision staff working in Makueni Sub-county. The collected raw data was coded and analyzed by both descriptive and inferential methods using Statistical Package for Social Scientist (SPSS) software. From the findings of the study, the researcher concluded that; LMMS has created a new platform for aid distribution that is vastly different and more efficient when it comes to registering, capturing data and retrieving records of beneficiaries to both recipients and users. This is because a single distribution projects are completed at least 50% faster. Multiple distribution projects, where registration is required only once, show a time savings of 90% or more. Secondly, a digitally traceable record of every distribution reduces the risk of fraud and ensures that the right items and quantities are distributed fairly thus enhancing accountability. Important as accountability is, there are even bigger benefits with the data we collected, we can account – down to the household level – where aid has been distributed and prepare periodic and annual reports demonstrating the efficiency and effectiveness of our efforts. Lastly, LMMS harmonization has improved food distribution by avoiding duplication, sharing information through networking and improved donor relationship. This research study hopes to inform the donor agencies to improve and expand their service delivery to needy communities economically thus ensuring equitable distribution to all. It recommends that the relief agencies and the government should adopt new and innovative ways of delivering aid to the targeted people through partnerships with Information technology experts. It is also recommended that through partnerships with IT experts, harmonization/coordination of various donor agencies operating in aid distribution will reduce transaction costs by avoiding distribution overlaps.

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ABBREVIATIONS AND ACRONYMS

ASALs	-	Arid and Semi-Arid Lands
CBS	-	Central Bureau of Statistics
DRR	-	Disaster Risk Reduction
CAADP	-	Comprehensive African Agriculture Development Programme
FAO	-	Food and Agricultural Organization
FAOSTAT	-	Food and Agricultural Organization Statistics (FAO Statistics)
GDP	-	Gross Domestic Product
GFD	-	General Food distributions
GNI	-	Gross National Income
IFAP	-	International Food Agricultural Policy
IMF	-	International Monetary Fund
KFSSG	-	Kenya Food Security Steering Group
LMMS	-	Last Mile Mobile Solutions
LDC	-	Least Developed Countries
LIFDC	-	Low-Income, Food-Deficit Countries
NGOs	-	Non-Governmental Organization
PRSP	-	Poverty Reduction Strategy Paper
SPSS	-	Statistical Package for Social Scientist
TI	-	Transparency International
UON	-	University of Nairobi
WFP	-	World Food Programme

CHAPTER ONE

INTRODUCTION

1.1 Background of The Study

According to World Bank report (1986) food aid, representing about 10% of total foreign aid transfers to developing countries, has become a major mechanism for stabilizing domestic supplies in food-insecure countries and for targeting food supply to alleviate hunger. Most projections made in the late 1980s forecast growing shortfalls in domestic food supplies in many least developed countries (LDCs). Thus these states, chronic food-insecure countries, seem unlikely without foreign assistance to be able to meet the needs of their hungry populations in the 1990s as their food consumption requirements outstrip production. As their import needs grow in the 1990s, so were their need for food aid or cash aid to purchase food (World Bank, 1986).

Latest estimates indicate that 826 million people remain undernourished in 1996 – 1998, 792 million people in the developing world and 34 million in the developed world Food and Agricultural Organization (2000). Most of them live in regions which can be characterized by low economic returns to agriculture and high transaction costs due to prolonged drought and insecurity. These regions are typically found in developing countries, especially in so-called low-income, food-deficit countries (LIFDCs) (Gaiha, Kaushik, & Kulkarni. 1998).

At the global level, the FAO Food Outlook for 2011 reports that estimates of people experiencing chronic hunger increased dramatically over the period 1990 to 2007 and even more with the 2008-2009 financial and economic crises. Political instability, wars, harsh weather and lack of incentives for agricultural transformation played a major role in compounding food

insecurity in Africa. Food and agricultural production and productivity have barely improved (except in few cases such as Malawi and Rwanda) and other critical elements such as inter sectoral linkages and diversification in staple production are lacking as well (Uvin, 1993). Rapid population growth and climate change continue to negatively impact food security and need to be factored in efforts at sustainable strategies and policies. The drought in the Horn of Africa and the Sahel has persisted, leaving millions of people destitute. (FAO, 2011)

Nyangito and Okello (1996) argues that although food production in developing countries has steadily increased during the past twenty years, this was not sufficient to keep pace with population growth. As a consequence, net food imports of developing countries are still increasing as well. It is often stated by scientists that even with an ongoing population growth enough food can be produced world-wide to guarantee all human beings an adequate diet.

By early 1980s, the volume of food aid to Africa had increased tenfold, relative to the 1970s. In particular international food aid grew. Food imports also grew during the same period. This was dramatically alarming because over the same period worldwide food aid declined by roughly 35% (Hopkins 1986: 197). The proportion of food aid to Africa has continued to rise. This has led to some critics for instance, Raikes (1988) and Rau (1991) to attribute the African food crises to food aid. Criticisms raised in this regard are: Food Aid serves as a disincentive to local food production; it distorts consumer preference and creates an undesirable demand for imported food, it encourages wasteful projects and props up unresponsive governments thus postponing reforms.

Achieving food security in Africa remains a challenge. The root causes of food insecurity in Africa are still not well addressed. Low production, induced by low productivity and the inability of people to gain adequate access to food due to poverty are the core challenges (Hopkins, 1986). The fact that 239 million (30 per cent of Africa's total population) of the world's total 1 billion undernourished live in Africa. The region is still recovering from the 2008 financial and food crises. The hike in oil prices contributed to the high food prices in many parts of the world, including Africa. Political instability in Africa, coupled with adverse weather conditions and lack of agricultural inputs played a role in the persistent food insecurity. African countries need to shape their policy response around increased agricultural productivity and production, development of markets and building resilience of vulnerable populations (United Nations Economic and Social Council, 2012)

Despite a good performance with high economic growth rates over the last few years, Kenya has not made significant progress on some of its major challenges, especially food security and employment for the growing youth population (Ministry of Agriculture, 2012). From 2011 to 2012, the state of food security has not changed much. The situation is still under the impact of the food crisis of 2007-2008, which reinforced the need for effective commitment to the development of the food and agriculture systems. In this regard, Kenya has aligned its agricultural strategies with the Comprehensive African Agriculture Development Programme (CAADP Kenya) process, which has received renewed commitment and support for its implementation since 2008. Many African countries have also developed national agricultural strategy blueprints within which national food security priorities have been identified for investment and policy support. (Kenya CAADP, 2010)

In Kenya, Arid and Semi Arid (ASAL) Counties have limited food availability. These Counties experience prolonged and frequent drought leading to depletion of the major communities' livelihoods, capacities and coping mechanisms Oliver, (1991). The regions have over the years experienced a series of short term and long term food crises that have greatly reduced the country's ability to meet its food requirement (FAO:2008). Since the beginning of 2011, Kenya has been hit hard by the drought in the Horn of Africa, creating a humanitarian emergency. At the same time, higher international commodity prices and continued strong domestic demand have boosted inflation and swelled the current account deficit, creating additional balance of payments risks (International Monetary Fund, African Department, 2011).

The Government of Kenya has shifted its policy from emergency to Disaster Risk Reduction (DRR) as envisioned in the Draft National Disaster Management Policy Oliver, (1991). Local producers cannot compete with free food, local service provider go out of business and short term thinking removes the incentives for dealing with the underlying problems (Republic of Kenya, 2004). Reduction of food dependency is a policy objective.

Makueni Sub-County is in Makueni County. This County is a Semi-Arid zone with many people suffering from hunger. Kalawa, Kathonzweni and Kitise are some of the most affected divisions experiencing more than two successive rain failures in long and short rains (World Vision report, 2012). World vision has been allocating a lot of resources in food aid interventions, relief seeds which are drought tolerant and other services every year with the aim of improving food security. This has not been enough because the resources are never enough but remain to be limited to

meet the needs of human population. The trend has not changed, thus all year long food crisis has been experienced in this County Kaloi, Tayebwa & Bashaasha (2005). Significant progress has not been actualized towards creating this much needed resilience in the rural ASAL areas of Kenya as more food is required to feed the hungry and vulnerable every year. Over the past years, Makueni Sub-County has recorded poor rainfall patterns leading to poor harvest, water scarcity and pasture depletion, insecurity, poor land terrain, poor soil and bad cultural practices which have resulted into hitches to improve livelihood base and mechanisms to improve food security. This worsening climatic situation, pastoralist culture and resultant crop failure has led to increased hunger vulnerability and malnutrition. (Oloruntoba, 2006).

1.2 Statement of the Problem

While the collection and management of field data is seen as vital, the processes used by humanitarian operations before the use of last mile mobile solution (LMMS) tended to be extremely labour and time intensive (Otto, 2012). Within food programming operations, the requirements to collect data in multiple and difficult locations, in different data formats, together with the need to have an auditable trail initially used an exhaustive paper-based system which had become increasingly complicated, expensive and slow.

The reliance on paper-based procedures to register the aid that beneficiaries receive was more time consuming and costly to audit and ensure against inaccuracies, loss or theft. To redress these notable gaps in food distribution, World Vision began partnering with key players in the IT sector and designed the Last Mile Mobile Solution (LMMS) software. This software is now being used to streamline the process of beneficiary registration, accountability and distribution of

food aid. The effect of this initiative in the distribution of food aid has not been evaluated in Makueni Sub-County. It is against this background that the current study intends to investigate the effect of LMMS system adoption in the distribution of food aid by World Vision.

1.3 Purpose of the Study

The purpose of the study was to assess the effect of Last Mile Mobile Solution adoption on food aid distribution by World Vision in Makueni Sub-County, Kenya

1.4 Objectives of the Study

This study was guided by the following objectives;

- i. To establish the effect of Last Mile Mobile Solution registration on distribution of food aid in Makueni Sub-County.
- ii. To assess the effect of Last Mile Mobile Solution system on accountability and distribution of food aid in Makueni Sub-County.
- iii. To determine the extent to which Last Mile Mobile Solution affects harmonization of food distribution in Makueni Sub-County.

1.5 Research Questions

- i. Is there any significant effect of LMMS registration on distribution of food aid in Makueni Sub-County?
- ii. Is there any significant effect of LMMS accounting system on distribution of food aid in Makueni Sub-County?
- iii. Is there any significant effect of LMMS harmonization on distribution of food aid in Makueni Sub-County?

1.6 The Hypothesis of the Study

This study was guided by the following hypothesis;

(i) **H₀**: There is no significant relationship between LMMS registration and distribution of food aid in Makueni Sub-County.

H₁: There is a significant relationship between LMMS registration and distribution of food aid in Makueni Sub-County.

(ii) **H₀**: There is no significant relationship between LMMS accounting system and distribution of food aid in Makueni Sub-County.

H₁: There is a significant relationship between LMMS accounting system and distribution of food aid in Makueni Sub-County.

(iii) **H₀**: There is no significant relationship between LMMS harmonization and distribution of food aid in Makueni Sub-County.

H₁: There is a significant relationship between LMMS harmonization and distribution of food aid in Makueni Sub-County.

1.7 Significance of the Study

The findings of this study are useful to all the local and international players involved in relief services to adopt new and innovative approaches to delivering aid. More specifically, the findings are useful to Non-Governmental Organizations (NGOs), small and micro-organizations as well as the local communities. Through implementation of the findings, the process of beneficiary registration, enrollment to projects and food distribution as well as generating final reports will be made much easier and accountable. Secondly, the findings of this study will be used by relief agencies as well as the government to improve and expand their service delivery to the needy communities in a way that is geared towards empowering these communities

economically while at the same time ensuring that the community is involved in the whole process as partner in the transformation process. It is hoped that the study may also enhance equitable distribution of food aid in Makueni Sub-County by the nongovernmental organizations.

1.8 Limitations of the Study

A number of limitations were anticipated during the study: one of the aspects of this study may be to determine domestic/family financial status. As such, some respondents were hesitant to provide useful information for the study due to embarrassment of exposing their poverty level. The researcher overcame this by assuring the respondents that the findings of this study would be used for academic purposes only.

In addition, time factor was a major constraint due to the tight schedule of development assistant project workers which could have affected data collection. The researcher was able to overcome this by making prior booking with the workers on the dates to visit their working stations. Also due to time and financial constraints, it was not possible to cover a large area and therefore the researcher selected a reasonable sample of respondents.

1.9 Delimitations of the Study

There are many factors which affect the performance development assistance projects but this study only investigated the effect of Last Mile Mobile Solution. This was because this is the most current technique in development assistance projects having been implemented in 2010. Also this study was carried out in Makueni Sub-County only because this is where the LMMS was first piloted and therefore the beneficiaries and workers are likely to give information that is reliable.

1.10 Assumptions of the Study

The researcher assumed that, Makueni Sub-County have enough households that benefits from relief food aid required to make the number of respondents for the study, the data collection methods was unbiased and the selected samples were representative of the population, and that there was no adverse natural or manmade circumstances that might have hampered the successful implementation of the research.

1.11. Definition of Significant Terms

Last Mile Mobile Solutions: Is a mobile technology aiming to change the aid distribution

process. LMMS bypasses the challenges that remote data collection typically faces in the last mile. With the swipe of a photo ID card, families receive the right amount of food, without waiting in line or conducting paper work. The beneficiaries of aid are directly registered in the field, and then immediately integrated into a humanitarian assistance project database, strengthening inventory control during aid distribution.

Effect: Is the change that the Last Mile Mobile Solution software has brought to the distribution of food by World Vision.

Adoption: Is the process of starting to use Last Mile Mobile Solution system.

Assets: The capabilities of household members, the economic resources to which they have access, as well as the information or influential others they have and their ability to claim from relatives, state or other actors, in times of stress. Therefore assets can be of three types: Human Capital, Economic Capital (Tangible Resources) and Social Capital (Intangible Claims and Access).

Food Aid: This is food given to countries or counties in need of food supplies to avoid starvation.

Food Access: Adequate resources to obtain appropriate food for a nutritious diet, this depends on income available to the household, on the distribution of income within the household and on the price of food.

Food Security: Exist when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life (World Food Summit 1996). Household food security is the application of this concept to the family level, with individuals within households as the focus of concern.

Food Insecurity: Exist when people do not have adequate physical, social or economic access to food.

Food Availability: Sufficient quantities of food from household production, other domestic output, commercial imports or food assistance.

Food Utilization: Proper biological use of food, requiring a diet providing sufficient energy and essential nutrients, potable water and adequate sanitation, as well as knowledge within the household of food storage and processing techniques, basic principles of nutrition and proper child care and illness management.

Food for Assets: As an integrated community development strategy involving the use of food aid, labor-based methods and participatory decision-making approaches in order to develop productive assets that are owned, managed and maintained by households and/or the community.

FFA Beneficiaries: Asset Benefited: A person or group of persons, who at the end of food assistance owns or has the right to use, assets created or improved by the activity.

Food Benefited: Individuals in the household of the work-benefited person, who are likely to share in eating the food earned through the activity. Work benefited: A person or group of persons receiving food in exchange for his/her/their work.

Food deficiency: People with insufficient nutritious food also called “food shortage”.

1.12: Organization of The Study

This study is organized in five chapters: chapter one is the introduction of the study and it consists of the background to the study, Statement of problem, purpose of the study and Objectives of the study, Research questions, significance, limitations, delimitations, assumptions of the study and operational definition of terms.

Chapter two is the literature that supports the study and it comprises of introduction of the chapters content, literature review is presented according to the objectives of the study and then conceptual framework.

Chapter three is the research methodology and it consists of the research design, target population, sampling procedure and sample size, research instruments and their validity and reliability, data collection procedures and analysis and finally the ethical consideration of the study.

Chapter four is data presentation, analysis and interpretation.

Chapter five consists of summary of the findings, discussions, conclusion and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

In this section, the proposed study will provide the needed background information on adoption of Last Mile Mobile Solution in food distribution in Makueni Sub-County. This chapter consists of literature review of the past studies and written documents on LMMS registration of food beneficiaries, LMMS and accountability in food aid distribution, LMMS harmonization in food aid distribution, theoretical framework and the conceptual framework of the study.

2.2 Effect of Last Mile Mobile Solution on Registration of Food Aid Beneficiaries.

According to a report by Global Humanitarian Assistance (2013), Kenya was the 8th largest recipient of official humanitarian aid in 2010 in the world having received the equivalent of 5.1% of its gross national income (GNI). Further, the report argues that parts of Kenya have had many instances of active conflict in seven out of ten years between 2002 and 2011 leading to increased need of humanitarian assistance (Global Humanitarian Assistance , 2013). Taylor (2012) argues that in 2009-2010 the international humanitarian system responded to 103 natural disasters and 43 complex emergencies/recoveries in developing countries (Taylor, 2012) and according to Transparency International (TI) , food assistance programs have represented the largest component of humanitarian assistance supported by donors in Kenya for many years (Transparency International, 2012).

World Vision adheres to strict guidelines in the interest of reaching people and communities with the appropriate aid through appropriate channels and has created procedures for registering

recipients for its programs and for distributing aid (Otto, 2011). World Vision's distributions are typically conducted in remote regions where internet connectivity, telephone service, and even electricity cannot be taken for granted. In the past this meant that only paper-based processes were practical. Emerging technology, however, has made a vast improvement possible which has substituted the old paper-pen-thumbprint system used by World Vision in registration of aid beneficiaries with a new technology called Last Mile Mobile Solutions (LMMS), a combination of hand-held scanners and advanced computer software (Otto, 2011).

LMMS has created a new platform for aid distribution that is vastly different and more efficient for both recipients and users. The mobile devices are rugged and equipped with touch screens, bar-code scanners, and cameras. These devices are used at every step of the process, recording recipient information during registration and verifying identities (Wangwe, 2012). No longer are fingerprints taken when individuals register and then again every time they receive aid. Instead, LMMS issues each recipient a photo and bar-coded identification (ID) card on the spot at the conclusion of registration. These ID cards are scanned at the distribution point, where automation replaces paper shuffling and fingerprinting. This scanned information also provides an immediate acknowledgement, transmitted to a laptop server in a nearby vehicle, of the recipient and what he or she received.

During registration, applications using Field Worker's platform update the SAP Sybase SQL Anywhere database that is contained within the Field Worker platform and held locally on the devices and synchronized to the roaming server through an ad-hoc wireless network. When connectivity becomes available, data is synchronized with back-end servers in central locations.

This information is then used to prepare detailed reports. It is also an excellent basis for analyzing important issues for the future, such as which areas are in need of greater support. “Previously, it was hard to make use of our data in the manual system. Now we have not only a database but one that is updated in real time and instantly available to deliver information (Otto, 2011).

The adoption of LMMS in registration of food aid beneficiaries has greatly improved the efficiency for food distribution to recipients, workers and donors. A key benefit of LMMS is the vast registration of beneficiaries thus saving time and improving the efficiency of aid distribution. Vital information about families, including family size and its particular needs, can soon be shared among relief organizations (World Vision report, 2011). Multiple distribution projects, where registration is required only once, show a time savings of 90% or more. A digitally traceable record of every distribution reduces the risk of fraud and ensures that the right items and quantities are distributed fairly (World Vision report, 2011).

According to the assessment carried out by Kenya Food Security Steering Group (KFSSG) (2011), since the registration of aid beneficiaries using LMMS was introduced, food security status of marginal agricultural farmers has improved considerably. As a result, emergency food insecurity has ended, and about 2.2 million people are now classified in either the Crisis or Stressed Phases of food insecurity, down from the previous 3.75 million people.

2.3 Effect of Last Mile Mobile Solution on Accountability of Food Aid Distribution.

Due to the increased population of people in need of humanitarian assistance across the world, and the many challenges associated with the implementation process, the Paris Declaration on Aid Effectiveness reaffirmed the commitments made at Monterrey, (2002) to scale up aid and those made in Rome, (2003) on improving the quality of aid. The effectiveness of aid is to be ensured by putting into practice in accordance with five principles: ownership and leadership, alignment, harmonization, managing of results and mutual accountability. These essentially constitute a system of accountability on the part of both donors and governments receiving aid (Wangwe, 2012).

As a result of the changing dimensions in the field of humanitarian assistance, many organizations have been faced with diverse challenges whenever they are trying to implement humanitarian programmes. These challenges include lack of proper accounting systems among humanitarian aid workers, poor participation among donor recipients and bureaucracy in implementing aid programmes among others. Humanitarian aid has been approached from a variety of perspectives. According to Wangwe (2012), the end of Second World War II marked the beginning of a major change in the evolution of the world economy and foreign aid came to the scene in the context of the emergence of a large number of new nation states as the process of decolonization was happening (Wangwe, 2012).

While playing a crucial role in saving lives and livelihoods, food aid also has a potential for abuse, dependency and politicization that sets it apart from other interventions. Thus food aid, perhaps more so than any other donated resource, must be deployed judiciously and with clear

purpose in mind. Yet there is no simple formula to guide program designers in striking the right balance between “helping recipients to do what they can, and expecting them to do all they can” (WFP, 1999). Efforts should also aim at achieving sustained, long-term improvements in the productive capacity of vulnerable countries and at the same time strengthening distribution of food aid and accountability (WFP, FAO 2010).

When responding to disasters and other emergencies, World Vision distributes not only food but also medicine, hygiene kits, cash, and other aid. In 2011, World Vision reached 9,659,028 recipients with food assistance programs alone valued at approximately US\$266 million (WFP, FAO 2010). As the world’s largest NGO, it provides over US\$2 billion in development and relief aid annually, with funding from generous individual donors, governments, and corporations. Managing funds and expectations of this size involves immense responsibility (Otto, 2011).

A key benefit of LMMS is the vast improvement in the efficiency of aid distribution it has introduced to World Vision staff and recipients alike. Single distribution projects are completed at least 50% faster. Multiple distribution projects, where registration is required only once, show a time savings of 90% or more. A digitally traceable record of every distribution reduces the risk of fraud and ensures that the right items and quantities are distributed fairly thus enhancing accountability. Important as efficiency is, there are even bigger benefits with the data we collect, we can account – down to the household level – where aid has been distributed and prepare reports demonstrating the effectiveness of our efforts (Otto, 2012). In the past, generating those reports could take up to four days, for a team of four to five people, and could lead to errors. The

donors really appreciate the timely, highly accurate reports LMMS system can now deliver, especially in light of increasing competition and declining resources.

Commitment has been made by donors and partners to be accountable for development results based on continued high-level political support, peer pressure and coordinated actions at the global, regional and country levels. It has been agreed to adopt the practice of making joint assessment of mutual progress in implementing agreed commitments (Otto, 2011). At present accountability requirements are often harder on developing countries than donors, yet aid is more effective when partner countries exercise strong and effective leadership over their development policies and use of LMMS. A OECD 2006 Survey (2007) found that mutual accountability, a key concept in the Paris Agenda, calls for performance assessment frameworks (PAF) and improved incentive systems in both partner and donor countries.

2.4 Effect of Last Mile Mobile Solution on Harmonization Food Aid Distribution

The presence of the multiplicity of donors and aid agencies numbering as many as 40 in many countries which tend to operate in diverse and poorly coordinated and harmonized ways result in high transaction costs to already over-stretched governments and further diminishes the effectiveness of aid (Gore, 2006). A survey that was designed and conducted by DAC Task Force on Donor Practices, found that the leading burdens on recipient countries included donor driven priorities and systems, difficulties with donor procedures, uncoordinated donor practices and reporting formats (OECD, 2003). These results have been reinforced by a more recent OECD 2006 Survey (2007) which has shown that the cost of unharmonized and uncoordinated

aid is very high and that there are too many actors with competing objectives, especially in the poorest and most aid-dependent countries, leading to high transaction costs (Gore, 2006).

This puts a challenge on developing strategies of aid harmonization and coordination and the need to adopt practices between donor agencies which aim at preventing unnecessary duplication of foreign aid, accountability and service delivery both for partner governments and donors (Magen, 2009). LMMS was adopted in harmonization and coordination of donor activities as part of the follow-up to the Rome High-Level Forum and to implement common arrangements at country level for planning, funding, disbursement, monitoring, evaluating and reporting to government on donor activities and aid flows (Wangwe, 2012). It has been acknowledged that increased use of harmonized LMMS on aid modalities can contribute to efficiency in food distribution by the donors. This would involve change of behaviour, policies and practices and adopting a pragmatic approach to the division of labour and burden sharing of responsibilities.

Bigsten, 2006 identified five aspects of LMMS harmonization and coordination; development of joint aid planning, management and disbursement mechanisms, gradual simplification of procedures to reduce the burden to the partner governments, information sharing to promote transparency and improved coordination and coordination of objectives and policy. Jean (2008) added that donor harmonization could be undertaken at various levels if the donors adopted LMMS at all levels which include; Project implementation level, Programme implementation level, National policy level and International strategies level. This suggests that, with the use of LMMS harmonization of broad policies has improved with the focus on poverty and the Millennium Development Goals. The use of the principal-agent model suggests that moral

hazard problems arise when the preferences of the principal and agent are not similar (Wangwe, 2012). This raises the problem of how to control the behaviour of the recipient and incentives. The use of LMMS in developing a multi-donor model demonstrates the value of coordination by showing a collective action can lower transaction costs and reap returns to scale arising from harmonization.

2.6 Conceptual Framework

From the literature review, the identified variables have been conceptualized as shown below.

Independent Variables

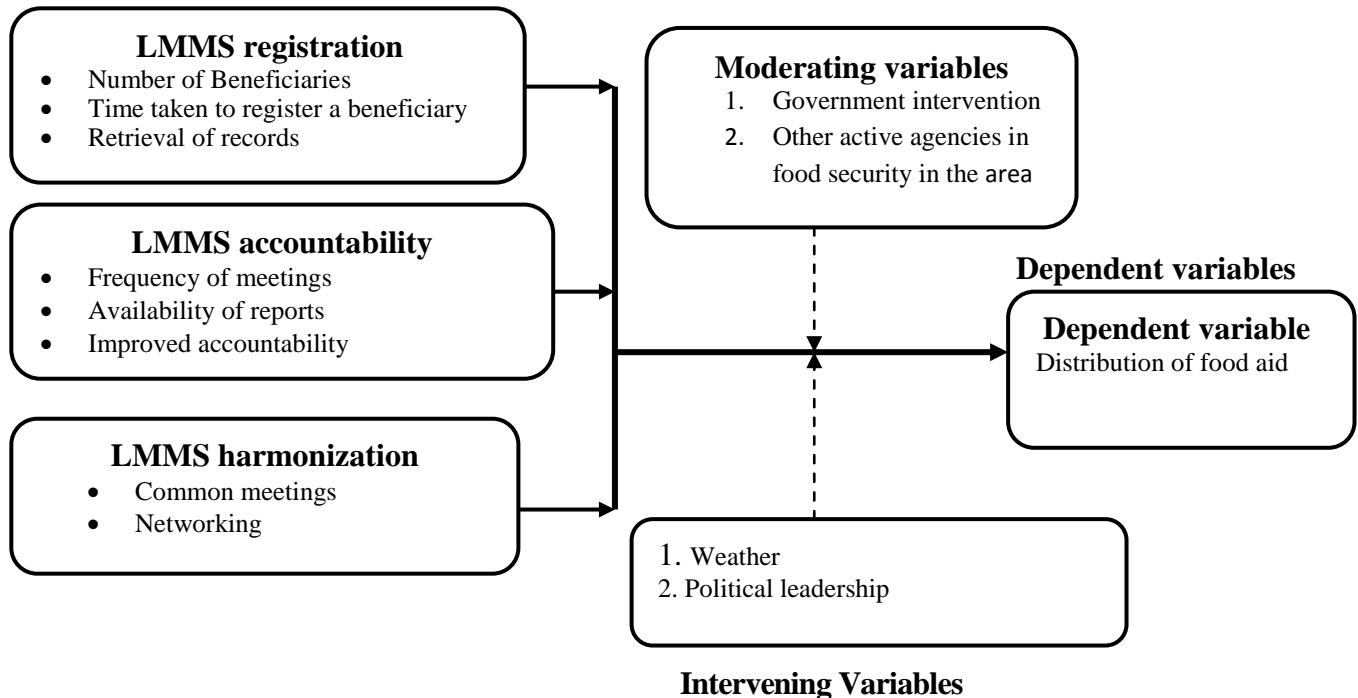


Figure 1 Conceptual Framework (compiled by the author)

The first independent variable of the study LMMS registration; the beneficiaries of the Food Aid are directly registered in the field/point at which they receive the aid and then immediately intergraded into the World Vision database. The second one LMMS accountability; by capturing

data on aid distribution in LMMS software at the point of distribution, World Vision is able to account for all the items distributed and to whom immediately without waiting for another one week to consolidate the information from the forms they were filling in before adoption of LMMS. Lastly LMMS harmonization has helped in sharing of information between the various donor agencies.

The moderating variables were Government intervention and other active agencies in food security in the area. These are indirectly affecting food security. Also there are other Intervening variables; weather (rainfall amount and distribution) and political leadership (party manifestos, enabling irrigation or fertilizer availability).

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the methods that were utilized by the researcher in the study. These included the research design, target population of the study, sampling and sampling techniques, research instruments for data collection and how to validate and check on reliability of the instruments used. This chapter also consists of data collection procedures, operational definitions of variables and methods of data analysis.

3.2 Research Design

Orodho (2005) defines research design as the scheme, outline or plan that is used to generate answers to research problems. The study adopted a descriptive survey design. This allows the researcher to collect data through questionnaires in order to sample a large population. Descriptive research design determines and reports findings the way they are. It attempts to describe possible factors such as behaviour, attitudes, values and characteristics (Mugenda & Mugenda, 1999). Survey design is conducted to collect detailed data on the existing phenomenon over a given geographical area or location with an intention of drawing possible conclusions from the facts discovered.

Descriptive research design was appropriate for this study for it was expected to yield new information and to generate clearer questions to maximize reliability. It takes enough protection against bias and maximizes reliability (Kothari, 2004). It enables one to gather information on opinions, attitudes and beliefs of the sampled population. It is also economical and provides data that is easy to analyze.

3.3 Target Population

The study targeted 830 households receiving food aid in Makueni Sub-County and 20 World Vision staff involved in distributing relief food (World Vision report, 2012).

3.4 Sample Size and Sampling Procedure

Sampling is a process used by a researcher to identify people or things to study (Kombo and Tromp, 2006). The sampling frame describes the list of all population elements from which the sample is selected (Cooper and Schindler, 2003). Sampling involves selecting some of the elements in a population so as to draw conclusions about the entire population.

Simple random sampling technique was used in the study. Simple random sampling was used in selecting 85 respondents out of which 83 respondents composed of heads of households and 2 world vision staff involved in distribution of food. This is 10 % of the eight hundred and thirty (830) households currently receiving food aid in Makueni Sub-County and twenty (20) members of staff involved in the food aid. This is sample size was sufficient as proposed by Gay (2003), who argued that a sample size of at least 10% is sufficient.

3.4.1 Sample Size

Respondents	Population	10%
Households	830	83
Staff	20	2
Total	850	85

3.5 Research Instruments

The information for the study was gathered by use of questionnaires as the main research instruments. The questionnaires were administered to the head of households, while a key informant questionnaire was administered to the staffs of the World Vision distributing food aid in Makueni Sub-County.

Questionnaires are research instruments that gather data of a large sample. They have the ability to save time and uphold a higher level of confidentiality as compared to other instruments (Mugenda & Mugenda 1999). Questionnaires can be statements or questions and in all the cases the respondent was responding to something written for specific purposes. Questionnaires were used because they are efficient in data collection especially when the researcher understands what is required and also when the sample size is large.

The questionnaire was divided into four sections; Section A: demographic information, Section B: the effect of LMMS registration on distribution of food aid, section C: the effect of LMMS

accountability on distribution of food aid, and section D: the impact of LMMS harmonization on distribution of food aid in Makueni Sub-County.

3.6 Instrument Validity

Validity is the extent to which a test measures what it claims to measure, that is the instrument measures the characteristics for which it is intended to. It is vital for a test to be valid in order for the results to be accurately applied and interpreted.

A research instrument is valid depending on how the data collected is related in terms of how effective the items sampled the significant aspects of the purpose of the study (Orodho, 2005). A pilot study to establish validity of the instruments was conducted using eight households. To ensure validity, the instruments used in this study were examined by the supervisor and other experts in the department of Extra mural Studies. Corrections identified were incorporated in the instruments in order to increase the validity (Mudenda & Mugenda, 2003).

3.7 Instrument Reliability

Reliability has to do with the quality of measurements. In research, the term reliability means "repeatability" or "consistency" of measures (Kasomo, 2006). In the piloting process split-half method was used by administering the questionnaires' closed-ended items was subjected to a pilot study utilizing a sample of eight randomly selected respondents. The data values collected were operationalized and the numerical scores were split into two using 'odd number versus even number items' process to get two sets of values which were correlated using Pearson Product Moment Correlation Coefficient and Spearman's Rank Correlation Coefficient to calculate the

coefficient of relationship. A correlation coefficient of 0.75 was obtained which is sufficient for these questionnaires to have high pretest reliability (Kasomo, 2006).

3.8 Data Collection Procedure

The researcher applied for authorization permit to collect data from the Ministry of Education. The researcher further got permission from World Vision office Makueni County to involve their staff in the research. The questionnaires were self-administered where the researcher requested respondents to fill them after which the researcher collected the filled questionnaires. Assurance was given to the respondents on the confidentiality of their identity.

3.9 Data Analysis Techniques

The collected raw data was coded and analyzed by both descriptive and inferential methods using Statistical Package for Social Sciences (SPSS) software version 20.0. Statistical tally system was used to generate frequency counts from the responses so as to prepare frequency distributions. Percentages were calculated from the responses gathered. As a measure of central tendency, the mean was used to decide the concentration side of responses. The researcher shall test hypothesis using Pearson's correlation coefficient to establish the relationship between the independent and dependent variables as well as analysis of variance.

3.10 Ethical Issues

The confidentiality of the respondents involved in the study was assured since their personal information was not put anywhere on the questionnaires. The sources of data and all information in the literature review and other areas were acknowledged.

Table 3.2 Operationalization of the Study Variables (compiled by author)

Objectives	Variables		Indicator (s)	Measurement	Level of Scale	Tools of Analysis
	Independent	Dependent				
To Establish the effect of LMMS of food aid distribution	LMMS Registration	Food Aid Distribution	Number of beneficiaries Time taken to register a beneficiary Retrieval of records	Access to food	Nominal Ordinal	Descriptive statistics Frequency Distributions Percentages Inferential Statistics Correlation
To assess the effect of LMMS accountability on food aid distribution	LMMS Accountability	Food Aid Distribution	Accuracy of records Availability of reports Improved accountability	Number of times the reports are given	Interval Nominal Ordinal	Descriptive statistics Frequency Distributions Percentages Inferential Statistics Correlation
To establish the effect of LMMS on harmonization of food aid distribution	LMMS Harmonization	Food Aid Distribution	Common Meetings Networking Shared Reports	Number of harmonized/ Coordinate groups	Interval Nominal Ordinal	Descriptive statistics Frequency Distributions Percentages Inferential Statistics Correlation

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS, DISCUSSIONS AND INTERPRETATION

4.1 Introduction

This chapter presents results from the collected data, interpretation and analysis of the results following the research objectives. The purpose of the study was to assess the effect of last mile mobile solution system adoption on food aid distribution by World Vision in Makueni Sub-County, Kenya.

85 questionnaires were administered to 83 heads of households that are currently benefiting from food aid distribution programme in Makueni Sub-County and 2 key informant questionnaires to staff of World Vision in the Sub-County with a 100% return. The collected data was analyzed using both descriptive and inferential statistics where frequency tables were created using Statistical Package for Social Sciences (SPSS) followed by data interpretation.

4.2 Questionnaire Return Rate

Questionnaire return rate was presented in Table 4.1

Table 4.1: Questionnaire Return Rate

Response rate	Frequency	Percentage (%)
Returned	85	100%
Not returned	0	0%
Total	85	100%

Table 4.1 shows that 100% of the questionnaires were filled in and returned. This shows that the questionnaires were well administered by the researcher and that the researcher had a good rapport with the respondents.

4.3 Distribution of Respondents by Gender

The respondents were asked to indicate their gender. The results are shown in Table 4.2

Table 4.2: Distribution of respondents by gender

Gender	Frequency	Percentage (%)
Female	62	73%
Male	23	27%
Total	85	100%

Table 4.2 showed that 73% of the respondents were female while 27% were male. This indicates that the majority of the respondents were female with a few men. This means that the burden of taking care of the households might be on the women rather than on the men.

4.4 Distribution of Respondents by Age

The researcher sought to establish the age distribution of the respondents, in order to ascertain how age disparity affected LMMS food aid distribution in the Sub-County. The results were presented in Table 4.3

Table 4.3: Distribution of Respondents by Age

Age in years	Frequency	Percentage
Less than 30	12	15%
30-34	25	29%
35- 39	25	29%
40 – 44	17	20%
45 and Above	6	7%
Total	85	100%

Table 4.3 shows that majority of the respondents (58%) were aged between 30 and 39 years. This was followed by those who were aged between 40 and 44 years with 20% and then those aged below 30 years at (15%). The least were those who were aged 45 years and above making 7%.

4.5 Marital Status of Respondents

The researcher sought to investigate the marital status of the respondents. The responses were presented in the Table 4.4.

Table 4.4: Marital Status of Respondents

Marital status	Responses	Percentage
Married	48	56%
Single Parents	25	30%
Widowed	12	14%
Total	85	100%

Tables 4.4 revealed that majority of the respondents (56%) were married. The category of respondents who were single parents constituted 30%. The widowed were 14%. This shows that the single parents and widowed respondents together make 44% indicating a possibility of high poverty levels hence need for relief food.

4.6 The effect of Last Mile Mobile Solution Registration on Distribution of Food Aid in Makueni Sub-County.

The first objective for this study was to establish the effect of Last Mile Mobile Solution Registration on distribution of food aid in Makueni Sub-County. The researcher first investigated the major economic activities of the respondents. The results were presented in Table 4.7

Table 4.5: Main Economic Activities for the Respondents

The researcher sought to establish the main economic activity of the respondents. The results are indicated in table 4.5.

Economic activity	Responses	Percent
Business	18	21%
Subsistence farming	56	66%
Employed	11	13%
TOTAL	85	100%

Table 4.5 shows that majority of the respondents were subsistence farmers (66%) as their main economic activity while 21% was doing business. The least were 13% of the respondents who

were employed. This indicates that there is food shortage since there is lack of enough rainfall in the sub-county throughout the year hence a significant need for food aid. As a result, majority of the respondents were relying on food aid as their major source of food. This large number of needy households therefore requires a fast system for registration and retrieval of information. Further the researcher sought to investigate the number of years the respondents had received food as well as rating of the LMMS registration. The responses were presented in table 4.6 and Table 4.7.

Table 4.6: Number of year's respondents had received food

Number of years	Frequency	Percentage
Less than 2	13	15.0
2 -5	56	66.0
6 -8	19	19.0
More than eight	0	0.0
Total	85	(100%)

Table 4.6 revealed that majority of respondents (66%) had received food for 2- 5 years followed by those who had received for 6 -8 years (19%). This means majority of the respondents had a good experience in both manual and LMMS registration and therefore could give reliable information.

Table 4.7: Last Mile Mobile Registration

Rating	Frequency	Percentage
Excellent	68	80%
Very good	17	20%
Good	0	0%
Fair	0	0%
Poor	0	0%
Total	85	100%

Table 4.7 shows that majority of the respondents (80%) indicated that the LMMS registration was excellent while 20 % indicated that it was very good. They indicated that the registration process was much faster as compared to the manual system. Also the system had made it easier to retrieve recipients' records each time they receive aid.

Further, the researcher tested the hypotheses to establish the relationship between the independent and dependent variables.

H₀: There is no significant relationship between LMMS registration and distribution of food aid in Makueni Sub-County.

H₁: There is a significant relationship between LMMS registration and distribution of food aid in Makueni Sub-County.

Table 4.8 Relationship between LMMS Registration and Food Distribution Aid

		LMMS Registration	Food Distribution Aid
LMMS Registration	Pearson Correlation	1	0.75
	Sig. (2-tailed)		0.004
	N	85	85
Food Distribution	Pearson Correlation	0.75	1
	Sig. (2-tailed)	0.004	
	N	85	85

Table 4.8 shows that the correlation coefficient between LMMS is 0.75. This shows that there is a strong positive relationship between LMMS registration and food aid distribution. Also the relationship between LMMS registration and food aid distribution is significant ($p < 0.05$), therefore the hypothesis was rejected and concludes that there is a significant relationship between LMMS registration and distribution of food aid in Makueni Sub-County. This means that, LMMS has improved the speed in registering the beneficiaries of food aid and therefore leading to improved rate of food distribution.

According to the study, there is a strong positive correlation (+0.75) between LMMS registration and food aid distribution. This concurs with Otto, (2011) who argues that a key benefit of LMMS is the vast improvement in the efficiency of food aid distribution introduced to World Vision staff and recipients alike. He further argued that single distribution projects are completed at least 50% faster. Multiple distribution projects, where registration is required only once, show a

time savings of 90% or more. LMMS has created a new platform for aid distribution that is vastly different and more efficient for both recipients and users. This is because the mobile devices are rugged and equipped with touch screens, bar-code scanners, and cameras. These devices are used at every step of the process, recording recipient information during registration and verifying identities (Wangwe, 2012). No longer are fingerprints taken when individuals register and then again every time they receive aid. Instead, LMMS issues each recipient a photo and bar-coded identification (ID) card on the spot at the conclusion of registration. These ID cards are scanned at the distribution, where automation replaces paper shuffling and fingerprinting. This scanned information also provides an immediate acknowledgement, transmitted to a laptop server in a nearby vehicle, of the recipient and what he or she received. During registration, applications using Field Worker's platform update the SAP Sybase SQL Anywhere database that is contained within the Field Worker platform and held locally on the devices and synchronized to the roaming server through an ad hoc wireless network. When connectivity becomes available, data is synchronized with back-end servers in central locations. This information is then used to prepare detailed reports. It is also an excellent basis for analyzing important issues for the future, such as which areas are in need of greater support. "Previously, it was hard to make use of our data in the manual system. Now we have not only a database but one that is updated in real time and instantly available to deliver information.

This also concurs with Kenya Food Security Steering Group (KFSSG) (2011), who argues that since the registration of aid beneficiaries using LMMS was introduced, food security status of marginal agricultural farmers has improved considerably. As a result, emergency food insecurity

has ended, and about 2.2 million people are now classified in either the Crisis or Stressed Phases of food insecurity, down from the previous 3.75 million people.

4.7 Last Mile Mobile Solution Accountability and Distribution of Food Aid

The second objective for this study aimed at assessing the effect of Last Mile Mobile Solution accountability on distribution of food aid in Makueni Sub-County. The researcher first investigated the level of accountability brought by LMMS. The responses are shown in Table 4.9.

Table 4.9: LMMS Accountability and Food Distribution

Activity	Yes (%)	No (%)
Held frequent meetings	80(94%)	5(6%)
Given frequent reports	64(76%)	21(34%)
Accountability improved food distribution	76(90%)	9(10%)
Mean Total	73(86%)	27(14%)

Table 4.8 revealed that 90% of the respondents on average agreed that LMMS accountability had improved food distribution through holding frequent meetings (94%) and giving frequent reports (76%) on aid distribution while 10% of the respondents did not agree that LMMS accountability had improved food aid distribution.

Further the researcher tested hypotheses to establish the relationship between the independent and dependent variables.

H₀: There is no significant relationship between LMMS accounting system and distribution of food aid in Makueni Sub-County.

H₁: There is a significant relationship between LMMS accounting system and distribution of food aid in Makueni Sub-County.

The responses are presented in Table 4.10

Table 4.10 Relationship between LMMS Accountability and Food Distribution

		LMMS	
		Accountability	Food distribution
LMMS Accountability	Pearson Correlation	1	0.85
	Sig. (2-tailed)		0.001
	N	85	85
Food Distribution	Pearson Correlation	0.85	1
	Sig. (2-tailed)	0.001	
	N	85	85

Table 4.9 shows that the correlation coefficient between accountability and food distribution is +0.85. This shows that there is a strong positive correlation between accountability and food aid distribution. The results also show that the relationship between LMMS accounting system and distribution of food aid in Makueni Sub-County is significant ($P < 0.05$), therefore the hypothesis was rejected. This means that LMMS accountability has greatly improved food distribution and thus enhanced transparency.

The study established that LMMS accountability has improved food aid distribution and that there was a strong positive correlation between that LMMS accountability and food aid

distribution. This concurs with Otto, (2011) who argues that a digitally traceable record of every distribution reduces the risk of fraud and ensures that the right items and quantities are distributed fairly thus enhancing accountability. Important as accountability is, there are even bigger benefits with the data collected, we can account – down to the household level – where aid has been distributed and prepare reports demonstrating the effectiveness of our efforts (Otto, 2012). In the past, generating those reports could take up to four days, for a team of four to five people, and could lead to errors. The donors appreciate the timely and accurate reports LMMS system can now deliver, especially in light of increasing competition and declining resources.

4.7 LMMS Harmonization and Food Distribution

The third objective for this study was to determine the extent to which Last Mile Mobile Solution harmonization affects food distribution in Makueni Sub-County. To achieve this objective, respondents were required to give information about how harmonization has improved food distribution. The responses were presented in Table 4.11.

Table 4.11: LMMS Harmonization and Food Distribution

Category	Yes (%)	No (%)
Avoiding duplication	83(98%)	2(2%)
Improved networking	80(94%)	5(6%)
Improved donor relationship	82(96%)	3(4%)
MEAN TOTAL	82(96%)	3(4%)

Table 4.11 revealed that, majority of the respondents (96%) of the mean total agreed that LMMS harmonization improved food aid distribution by avoiding duplication, sharing information through networking and improved donor relationship.

To establish the relationship between LMMS harmonization and distribution of food aid, the researcher tested the hypothesis below.

H₀: There is no significant relationship between LMMS harmonization and distribution of food aid in Makueni Sub-County.

H₁: There is a significant relationship between LMMS harmonization and distribution of food aid in Makueni Sub-County

This hypothesis was tested using Pearson’s correlation coefficient to see the strength of the relationship between the independent and dependent variables.

Table 4.12 Relationship between cultural practices and food security

		LMMS harmonization	Distribution of food
LMMS Harmonization	Pearson Correlation	1	0.81
	Sig. (2-tailed)		0.012
	N	85	85
Distribution of Food	Pearson Correlation	0.81	1
	Sig. (2-tailed)	0.012	
	N	85	85

Table 4.12 shows that the correlation coefficient between LMMS harmonization and distribution of food is +0.81. This shows that there is a strong positive correlation between LMMS harmonization and distribution of food aid. The significant level is 0.012 ($P < 0.05$) and therefore the hypothesis was rejected and a conclusion drawn that LMMS has significantly improved the harmonization of donor agencies in the distribution of food aid in Makueni Sub-County.

The study established that LMMS harmonization improved food distribution by avoiding duplication, sharing information through networking and improved donor relationship. This concurs with Gore (2006) who argued that the presence of multiple donors and aid agencies numbering as many as 40 in many countries tend to operate in diverse and poorly coordinated and harmonized ways result in high transaction costs to already over-stretched governments and further improves the effectiveness of food aid distribution. A survey that was designed and conducted by DAC Task Force on Donor Practices found that, the leading burdens on recipient countries included donor driven priorities and systems, difficulties with donor procedures, uncoordinated donor practices and reporting formats (OECD, 2003). These results have been reinforced by a more recent OECD 2006 Survey (2007) which has shown that the cost of unharmonized and uncoordinated aid is very high and that there are too many actors with competing objectives, especially in the poorest and most aid-dependent countries, leading to high transaction costs (Gore, 2006).

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION

5.1 Introduction

This chapter presents the summary of the findings, discussion of the findings, conclusions from the study, and recommendations on the adoption of Last mile mobile solution in food aid distribution and suggestions for further research.

5.2 Summary of the Findings

The purpose of the study was to investigate the effect of last mile mobile solution in Food Aid Distribution by World Vision in Makueni Sub-County. The objectives of the study were to establish the LMMS registration of food aid beneficiaries, to assess the effect of LMMS accountability of food aid distribution and to determine to what extent LMMS has affected the harmonization of food aid distribution in Makueni Sub-County.

The study revealed that majority of the respondents (66%) were subsistence farmers, 21% were in business and 13% were employed. This indicates that there is food shortage since there is lack of enough rainfall in the sub-county throughout the year hence need for food aid. As a result, majority of the respondents were relying on food aid as their major source of food. This big number of needy households therefore requires a fast and efficient system for registration as beneficiaries and retrieval of their information. There was a strong positive correlation (+0.75) between LMMS registration and food aid distribution.

It was also established that 86% of the respondents on average agreed that LMMS accountability had improved food aid distribution while 14% did not agree. Also there was a strong positive correlation ($r = +0.85$) between LMMS accountability and food aid distribution.

Finally the study established that majority of the respondents (96%) of the mean total agreed that LMMS harmonization improved food aid distribution by avoiding duplication, sharing information through networking and improved donor relationship. There was also a strong positive correlation ($r = 0.81$) between LMMS harmonization and food aid distribution.

5.3 Conclusions of the Study

From the findings of this study, the researcher concluded that; LMMS has created a new platform for aid distribution that is vastly different and more efficient for both recipients and users. This is because a single distribution project is completed at least 50% faster. Multiple distribution projects, where registration is required only once, show a time savings of 90% or more.

Further, a digitally traceable record of every distribution reduces the risk of fraud and ensures that the right items and quantities are distributed fairly thus enhanced accountability. Important as accountability is, there are even bigger benefits with the data collected; there is accountability down to the household level, where aid has been distributed and accurate reports demonstrating the effectiveness of the LMMS system.

Lastly, LMMS harmonization improved food distribution by avoiding duplication, enhancing sharing of information through networking and improved donor relationship.

5.4 Recommendations of the Study

In view of the research findings, the researcher recommends that the local and international players in relief services adopt new and innovative ways of delivering aid. Through the implementation of information technology in their programmes, the process of rolling out new projects, beneficiary registration and generation of quarterly/annual reports will be made much easier and those involved accountable.

Secondly, the relief agencies as well as the local and national governments in the county should partner with information technology experts in order to improve and expand their service delivery to the needy communities economically while putting in place strategies aimed at achieving sustainable measures towards food security in the county.

The local government should be encouraged to partner with Information Technology experts to improve harmonization/ coordination between the various donor agencies in Makueni County, this will enable them reach all persons who need aid without overlaps amongst players thus cut down on operation costs.

5.5 Suggestions for Further Research

Based on the findings of the study, the researcher makes the following suggestions for further research;-

- i) The factors influencing food insecurity in Makueni Sub-County.
- ii) The factors influencing effective distribution of food aid in Makueni County.
- iii) The impact of Non- Governmental organizations services on the livelihood of local communities in Turkana East Sub-County.

REFERENCES

- Bals, H. (2008). *Climate Change, Food Security and the Right to Adequate Food*. New York: Springer.
- Benson, T. (2004). *Africa's Food and Nutrition Security Situation; where are we and how did we get here?* 2020 Discussion Paper No. 37. IFPRI Washington DC
- Bryson, J. C., Chudy, J. P., & J. M. Pines. (1991). *Food for work. A review of the 1980s with recommendations for the 1990s*. Retrieved November 2010 from USAID under Contract No. OTR-0700-C-00-9133-00, PIO/T No. 0381800.
- Cooper, D. R. & Schondler, P. S. (2003). *Business Research Methods* (8th ed.) Boston:Mc Grow-Hill Irwin
- Disaster Relief Management (2012). *Humanitarian Logistics and Supply Chain Management*. In C. S. Management, *Humanitarian Logistics* (pp. 5-15). New York: Springer.
- David, W. (1998) *Globalization, Uneven Development and Poverty Recent Trends and Policy Implications*. New York: Springer.
- Disaster Accountability Project (2013). *Why Accountability*. Retrieved April 13, 2013, from www.disasteraccountability.org: <http://www.disasteraccountability.org/2>
- Kaloi, E. Tayebwa B. & Bashaasha, B. (2005). *Food Security Status of Household in Makueni County, Kenya*. Department of Agricultural Economic and Agribusiness, Makerere University, Kampala, Uganda.
- Kothari, C. R. (2004). *Research Methodology: Methods Techniques*; Vishwa, Prakashan
- Ellis, F. (2000). *Rural Livelihoods and Diversity in Developing Countries*: Oxford University Press, Oxford
- Food and Agricultural Organization (2012). *Crop Prospect and Food Situation*, Food and Agriculture Organization, No.2, June 2012
- Food and Agricultural Organization (2000). *The State of Food Insecurity in the World*. FAO. Rome, Italy
- Food and Agricultural Organization (2008). *State of Food and Agriculture, 2008*. FAO. Electronic Publishing Policy and Support branch, viale delle Terme di carralla. Rome, Italy.

- Gaiha, R., Kaushik, P. D. & Kulkarni V. (1998). *Jawahar Rozgar Yojana, Panchayats, and the Rural Poor in India*. University of California Press. Retrieved November 29, 2010
- Gedamu, A. (2006). Food for Work Program and its Implications on Food Security: A Critical Review with a Practical Example from the Amhara Region, Ethiopia. *Journal of Agriculture and Rural Development in the Tropics and Subtropics*, 107(2).
- Gillespie, S. & Kadiyala, S. (2003). “*Rethinking Food Aid to Fight HIV/AIDS*”, IFPRI. Kenya
- Global Humanitarian Assistance (2013, February). *Fast facts -Kenya*. Retrieved February 23, 2013, from Global Humanitarian Assistance- Development initiative: <http://www.globalhumanitarianassistance.org/countryprofile/kenya>
- Government of Kenya; The 2011/12 Short Rains Seasons Assessment Report.
- Gore, R. & Patel, M. (2006). *Cash Transfers in Emergencies: A review drawing upon the tsunami and other experience*. Thailand: UNICEF.
- Hopkins, R. F. (1986). Food Aid: Solution, Palliative, or Ganger for Africa’s Food Crisis
- International Monetary Fund (2011). *World Economic Outlook Update*; African Department IMF Survey Magazine: Countries & Regions, 2011
- Joseph, K. (2004). *Towards Achieving Food Security in Kenya*. Paper presented at the Assuring Food and Nutrition Security in Africa by 2020.
- Lancaster, C. & Wangwe, S.M. (2000). Managing a Smooth Transition from Aid Dependence in Africa. *Economic Development Policy Essay no 28, Overseas Development Council*,.
- Magen, B. (2009). *Can Cash Transfers Promote Food Security in the Context of Volatile Commodity Prices?*. Food, Agriculture and Natural Resource Policy Analysis Network.
- Maxwell, S., Frankenberger, T. & Timothy, R. (1992). *Household Food Security: Concepts, Indicators, Measurements*. A Technical Review. New York: UNICEF/IFAD.
- Messer, E. & Cohen, M. J. 2004. *Breaking the Link between Conflict and Hunger in Africa 2020* Africa Conference Brief No. 10. IFPRI Washington DC.
- Mugenda, O. & Mugenda, A. (2003, 2008). *Research Method: Qualitative and Quantitative Approaches*, Nairobi: Act Press
- Mugenda, O. & Mugenda, A. (1999). *Qualitative and Quantitative Approaches*, Nairobi: Act Press

- National Defense University Press (2012, 12). *National Defense University Press*. Retrieved 3 1, 2013, from Lost in Translation: The Challenge of Exporting Models of Civil-Military Relations: <http://www.ndu.edu/press/exporting-models.html>
- Nyangito, H. & Okello, J. (1996). *Kenya's Agricultural Policy and Sector Performance 1964 to 1996*; occasional paper No. op/04/98.
- Organization for Economic Co-operation and Development (2006). *The Paris Declaration on Aid Effectiveness and the Accra Agenda for Action*. Paris: OECD.
- Oliver, C. (1991). "Strategic Responses to Institutional Processes" *Academy of Management Review*, vol. 16 p. 145 – 179, P. 151
- Oloruntoba, R. (2006). Humanitarian Aid: An Agile Supply Chain? *Supply Chain Management: An International Journal*, 115-120.
- Orodho, J. A. (2004). *Elements of Education and Social Sciences*. Research Methods. Botswana. Masaula Publisher, Gaborana.
- Otto, F. (2011,2012). *The Technology Bringing Humanitarian Relief*. World Vision. Kenya
PRSP. (2001). Poverty Reduction Strategy Paper for the Period 2001 – 2004, Volume 1. Ministry of Finance and Planning, Kenya
- Raikes, P. (1998). *Modernizing Hunger*. London: James Curvey
- Rau, B. (1991). *From Feast to Famine*. London. Zen books.
- Subbaro, K. (1997). *Public Works as an Anti-Poverty Program: An Overview of Cross-Country Experience*. World Bank.
- Taylor, G. (2012). The State of the Humanitarian System. *Active Learning Network for Accountability and Performance in Humanitarian Action (ALNAP)* .
- Transparency International (2012). Analysis of the 2011 drought response in Kenya. *Food Assistance integrity study*, 9.
- Tutui, N. (2011). *Exposing Cause of Food Insecurity in Horn of Africa*, Nairobi, Oxford publishers.
- United Nations, Economic and Social Council (2012). Eighth session of the committee on food security and sustainable development.
- Wangwe, S. (2012). *Foreign Aid , Accountability and Service Delivery in Africa*. Dar es Salaam: DAIMA ASSOCIATES LIMITED.

- World Food Program Policy Issues Series, Agenda Item for Enabling Development, EB.A/99/4-A, May 1999
- World Food Program, Food and Agricultural Organization (2010). The State of Food Insecurity in the World. Addressing Food Insecurity in Protracted Crises
- World Bank (1986). *World Bank summary of 1986, later adopted at World Food Summit of 1996 and has since become the guiding principle of the UN Food and Agricultural Organization (FAO), see Chapter 2, present food security situation II*
- World Vision –Food Program Management Group (2012). *Last Mile Mobile Solution-Resource Manual Version1/0*. Johannesburg: World Vision .
- World-Vision (2012). World Vision: Going Digital with Last Mile Mobile Solutions to Deliver Aid with Dignity. *SAP Customer Success Story | Public Sector | World Vision*, 5.
- Unites States Agency for International Development (2006). *Module II: Food for work*. Food for Peace. Retrieved November 29, 2010 from http://www.usaid.gov/our_work/humanitarian_assistance/ffp/crg/module2.html.
- Naylor, R. L. (1995). *Employment for Poverty Reduction and Food Security*. Retrieved November 29, 2010 from <http://www.ifpri.org/publication/employment-poverty-reduction-and-food-security>

APPENDICES

APPENDIX I: Transmittal Letter
OMOTO CAROLYNE ONDIALA
P.O Box 170

KITUI.

9th JANUARY, 2014

The Respondents

Makueni Sub-County,

Dear Sir/Madam,

REF: TRANSMITTAL LETTER

I am a Post graduate student at the University of Nairobi pursuing a Master of Arts Degree in Project Planning and Management. As part of the requirements for the award of this degree I am conducting a study on the effect of the adoption of LMMS on food aid distribution in Makueni Sub-County.

I hereby request you to assist me in completing this questionnaire. Your information will only be used for the purpose of this study and it will be kept confidential. Do not write your name anywhere on the questionnaire.

I am very grateful for your participation and co-operation.

Thank you,

Yours faithfully,

CAROLYNE ONDIALA OMOTO

Appendix II: Households' questionnaire

The aim of this study is to investigate the influence of Last Mile Mobile Solution in distribution of food aid by the World Vision in Makueni Sub-County. You have been selected for this study. You are requested together with others in the Sub-County to complete this questionnaire.

Instructions to the Respondent

- 1. Please respond to all the items in this questionnaire.*
- 2. Do not write your name anywhere on this questionnaire.*
- 3. Tick your appropriate choice and write down the brief statements in the open-ended questions.*

Section A: Demographic data for the respondents

1. What is your gender?
 - (a) Male ()
 - (b) Female ()
2. What is your age bracket?
 - (a) Less than 30 years ()
 - (b) 30-34 years ()
 - (c) 35-39 years ()
 - (d) 40-44 years ()
 - (e) 45 years and above ()
3. What is your highest educational level?
 - (a) PhD ()
 - (b) Masters ()
 - (c) Degree ()
 - (d) Diploma ()
 - (e) Certificate ()
 - (f) Other.....
4. What is your marital status?
 - (a) Married ()
 - (b) Single ()
 - (c) Widowed ()

- (d) Divorced ()
- 5. What is your family size?
 - (a) Less than 3 ()
 - (b) Between 3 and 7 ()
 - (c) More than 7 ()

SECTION B: Effect of last mile mobile solution registration on food distribution

- 6. What is your main economic activity?
 - (a) Subsistent farming ()
 - (b) Business ()
 - (c) Employed ()
 - (d) None of the above ()
- 7. What is your land size in acres?
 - (a) Less than 2 acres ()
 - (b) 2 - 5 acres ()
 - (c) 6 - 8 acres ()
 - (d) More than 8 acres ()
- 8. What size of land is not cultivated?
 - (a) Less than 2 acres ()
 - (b) 2 - 5 acres ()
 - (c) 6 - 8 acres ()
 - (d) More than 8 acres ()
- 9. What is your major source of food?
 - (a) Farming ()
 - (b) Buying ()
 - (c) Relief food ()
- 10. How long have received food in years
 - (a) Less than 2 years ()
 - (b) 2 – 5 years ()
 - (c) 6 – 8 years ()

(d) More than 8 years ()

11. Have you ever been registered using last mile mobile solution?

(a) Yes ()

(b) No ()

12. If yes, how would you rate last mile mobile solution registration in terms of time saving?

.....
.....

Section C: Last mile mobile solution accountability on food aid distribution

13. Do you ever have meetings with World Vision workers in charge of food distribution?

(a) Yes ()

(b) No ()

14. If yes, how many times in a year?

(a) Less than 2 ()

(b) 2 – 5 years ()

(c) 6 - 8 years ()

(d) More than 8 ()

15. Are you given any report about food distribution?

(a) Yes ()

(b) No ()

16. What are the major challenges to food aid distribution efficiency?

(a) Political interference ()

(b) Lack of accountability ()

(c) Amount of food ()

17. To what extent do you agree with the statement that last mile mobile solution has improved the accountability in food aid distribution.

(a) Strongly agree ()

(b) Agree ()

(c) Not sure ()

(d) Disagree ()

Section D: Last mile mobile solution Harmonization on food aid distribution.

18. Does last mile mobile solution improve harmonization and coordination of food distribution?

(a) Yes ()

(b) No ()

19. If yes, how

.....

Appendix III: Questionnaires for World Vision staff distributing food aid in Makueni

Sub-County.

The aim of this study is to investigate the influence of last mile mobile solution adoption in the distribution of food aid in Makueni Sub-County. You have been selected for this study. You are requested together with others in the sub-county to complete this questionnaire.

Instructions to the Respondent

- 1. Please respond to all the items in this questionnaire.*
- 2. Do not write your name anywhere on this questionnaire.*
- 3. Tick your appropriate choice and write down the brief statements in the open-ended questions.*

1. What is your gender?

(a) Male ()

(b) Female ()

2. What is your age bracket?

(a) Less than 30 years ()

(b) 30-34 years ()

(c) 35-39 years ()

(d) 40-44 years ()

(e) Over 45 years ()

3. What is your highest educational level?

(a) PhD ()

(b) Masters ()

(c) Degree ()

(d) Diploma ()

(e) Certificate ()

(f) Other specify.....

SECTION B: Effect of last mile mobile solution registration on food aid distribution

- 4. How long have you worked with world vision in years?
 - (a) Less than 2 years ()
 - (b) 2 - 5 years ()
 - (c) 6- 8 years ()
 - (d) More than 8years ()
- 5. Have you ever been involved in food distribution?
 - (a) Yes ()
 - (b) No ()
- 6. What method do you currently use in registration of food aid beneficiaries?
 - (a)Manual ()
 - (b)Last Mile Mobile Molution ()
- 7. Have you ever been trained on how to use last mile mobile solution?
 - (a)Yes ()
 - (b)No ()
- 8. How has last mile mobile solution helped you in food distribution?

.....

.....

.....

Section C: Last mile mobile solution accountability in food aid distribution

- 9. Do you ever have meetings with of food aid beneficiaries in your area?
 - (a) Yes ()
 - (b) No ()
- 10. If yes, how many times in a year?
 - (a) Less than 2 years ()
 - (b) 2 - 5 years ()
 - (c) 6- 8 years ()
 - (d) More than 8 years ()
- 11. How often do you submit report on food aid distribution to the donors in a year?
 - (a) Less than 2 ()

- (b) 3 - 5 ()
 - (c) 6- 8 ()
 - (d) More than 8 ()
12. To what extent do you agree with the statement that last mile mobile solution has improved the accountability in food aid distribution.
- (a) Strongly agree ()
 - (b) Agree ()
 - (c) Not sure ()
 - (d) Disagree ()

Section D: Last mile mobile solution Harmonization in food aid distribution

13. Does last mile mobile solution improve harmonization and coordination of food distribution?
- (a) Yes ()
 - (b) No ()
14. If yes, how.....
15. At what level of the project do you use LMMS most?
- (a) Project implementation level ()
 - (b) Programme implementation level ()
 - (c) National policy level and international strategies level. ()
16. What is the major method used in coordinating food distribution activities?
- (a) Chiefs barazas ()
 - (b) Field workers visitation ()
 - (c) LMMS adoption ()