

**ASSESSING THE FEDERAL GOVERNMENT'S COMMUNICATION
CAMPAIGN ON CASSAVA TRANSFORMATION AT THE NATIONAL
ROOT CROPS RESEARCH INSTITUTE, UMUDIKE, ABIA STATE.**

BY

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**DEPARTMENT OF MARKETING
FACULTY OF BUSINESS ADMINISTRATION
UNIVERSITY OF NIGERIA
ENUGU CAMPUS**

JUNE, 2014

TITLE PAGE

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**BEING A RESEARCH PROJECT PRESENTED TO THE
DEPARTMENT OF MARKETING , FACULTY OF BUSINESS
ADMINISTRATION, UNIVERSITY OF NIGERIA ENUGU CAMPUS
IN PARTIAL FULFILLMENT OF THE AWARD OF MASTERS IN
MARKETING (PUBLIC RELATIONS)**

SUPERVISOR: PROF J.O. ONAH

JUNE, 2014

CERTIFICATION

I, Ozoalor Chigolum C. with Registration Number PG/M.Sc/09/53695 hereby certify that the work embodied in this project research work is original and has not be submitted in part or in full for any other Diploma or Degree in this University or any other Institution of Higher Learning.

Ozoalor Chigolum C.
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APPROVAL PAGE

Ozoalor Chigolum C., a postgraduate student in the Department of Marketing, Faculty of Business Administration, University of Nigeria Enugu Campus with registration number PG/M.Sc/09/53695 has satisfactorily completed the research project requirement for the award of master's degree in marketing (Public Relations).

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Prof. G.E. Ugwuonah
Head of Department

Date

Date

DEDICATION

I dedicate this work to the National Root Crops Research Institute, Umudike, Abia State, especially the Cassava Transformation Agenda Project Team and also to the Federal Ministry of Agriculture and Rural Development.

ACKNOWLEDGEMENTS

Most research works are always combined effort of a number of people. I therefore, specially appreciate the entire members of the Cassava Transformation Agenda Project of National Root Crops Research Institute, Umudike, Abia State, for their assistance and encouragement, special thanks to the first co-ordinator of the project, Dr. Chiedozi Egesi (Head Cassava Breeding in the Institute), for helping in gathering of relevant materials and for his meaningful suggestions and contributions.

My appreciation also goes to the General Manager, Federal Radio Corporation of Nigeria, Purity FM Awka, Anambra State, Mrs. Miriam Menkiti for her help and moral support. I wish to most sincerely appreciate my family's vision and determination to see me through in this project, my Dad in particular, Mr. Tony Ozoalor. Also my special thanks go to my lecturers: Dr. A. Ehikwe, Dr. Joseph Uduji, Dr. Shed Mogoluwa and others.

To my supervisor, Professor J.O. Onah for his patience, stimulating advice, encouragement and sincere criticism which had made this task a success. Finally, my greatest appreciation goes to the Almighty God (Jehova Elshadai) who gave me all that is required to achieve this project. It can only be him.

To God be the Glory.

Ozoalor Chigolum
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Abstract

The study assessed the communication campaign programs of the federal government's cassava transformation initiatives as carried out by the National Root Crops Research Institute, Umudike, Abia State. The survey research method using questionnaire and interview was used to obtain data from the respondents. The research work was highly descriptive and inferential in nature. This involved the use of tables and sample percentages as basic descriptive statistical technique employed to analyze the raw data which was obtained from primary sources. The raw data was subsequently subjected to chi-square test and one sample t-Test as major tool for hypotheses testing. The alternate hypotheses of the four hypotheses were all accepted. Findings reveal that, radio, manuals, bulletins, word of mouth, press releases, newsletters, newspapers, newsmagazines, special events and television are some of the campaign programs employed by the National Root Crops Research Institute, Umudike, in the cassava transformation campaign of the federal government. Other campaign strategies employed by the institute during the cassava transformation campaign include: the audience participation model, the 5ps of social marketing. It was concluded that adequate, effective/efficient campaign programs, via the right media and methods of communication, backed up by adequate funding enhance social change and elicit positive responses from the citizens, especially the Nigerian farmers toward appreciating the governmental programs. It was therefore recommended that, in planning any campaign program by either the public or private organizations, aimed at positive change or positive response from the citizens, adequate, effective/efficient campaign programs, such as public relations information, education and communication programs; advertising; face to face contact; publicity; etc must be executed, and this should be done via the right media (print, electronic and created media) and methods (TV announcements and Jingles, radio announcements and jingles, posters, fliers, banners, mobile cinemas, mobile announcements, church announcements, Age-grades, town unions, schools announcements, women associations, traditional rulers, town criers, e.t.c.) and ensuring that adequate funds are provided to back-up the campaign programs, as this is a guaranteed way of achieving the set goals and objectives of the cassava transformation initiatives of the federal government.

CHAPTER ONE

INTRODUCTION

1.2 Background of the Study

Nigeria is an agrarian country with about 70% of her over 140 million people engaged in agricultural production (NBS/CBN, 2006) and provides subsistence for 2/3 of Nigerians who are low income earners (Usman, 2006). While the Northern part of the country can guarantee the production of cereals such as Sorghum, Maize, millet, groundnut, cowpea and cotton, the middle belt and the south has the potentials to produce root tubers such as cassava, yam, coco yam and other crops like plantain as well as maize (Abdullahi, 2008).

In addition to crops, the country is also involved in the production of livestock fisheries, forestry and wildlife (Ugwu and Kanu, 2012). But recently, there has been declining contributions of agriculture to the Gross Domestic Product (GDP) in the past three decades. This could be associated with the gross neglect of the agricultural sector and over dependence on the oil sector. In the pre and post independence era (1930 to 1965), the Nigerian economy was predicated on agriculture.

Agriculture employed about 70 to 80% of the country labour force (Falusi and Olayide, 1980 quoted in Ugwu and Kanu, 2012) and contributed 60% of the nation's Gross Domestic Product (GDP) and foreign exchange earnings (CBN, 2006). In the post oil boom era (1977-2002), the price of crude oil started fluctuating and falling, leading to a growing need to revitalize the agricultural sector as well as diversify the economy.

In order to revamp the agricultural sector, the Federal Government has embarked on and implemented several agricultural policies and programmes, some of which are defunct or abandoned while some others are still in place. These include: the farm settlement scheme, National Accelerated Food Production (NAFPP), President Shehu Shagari's Green Revolution, former President Olusegun Obasanjo's Operation Feed the Nation and most recently President Goodluck Jonathan's Agriculture Transformation Programme.

The Agricultural Transformation Programme focuses on achieving a hunger-free Nigeria through an agricultural sector that drives income growth, accelerates achievement of food and nutritional security, generates employment and transforms Nigeria into a leading player in the global food markets as well as to grow wealth for millions of farmers (FMARD, 2011). The transformation action plan for some priority agricultural commodities will be focused in the six geopolitical zones of the country. The commodities are rice, cassava, Sorghum, cocoa, cotton, maize, dairy, beef leather, poultry, oil palm, fisheries as well as agricultural extension (FMARD, 2011).

The cassava transformation action plan/campaign, an initiative of the federal government of Nigeria, seeks to create new generation of cassava-oriented farmers, towards commercial production and farming as a business and to link them up to reliable demands either for processing or guaranteed minimum price scheme of government (FMARD, 2011). It also has the strategy of turning the cassava sector in Nigeria into a major player in local and international starch, sweeteners, ethanol, high quality cassava flour and dried chips industries by adopting improved production and processing technologies and organizing producers and processors into efficient value ñ added chains (Iweka et al, 2002). In bringing this agenda into reality, Government through its agricultural agencies aims at bringing about a new orientation in the minds of people especially about cassava and its uses.

Cassava has played and continued to play a phenomenal role on the agricultural sector of Nigeria, and subsequently on the GDP of the Nation. Since its debut in the late 1600s on the Portuguese trade ships from Brazil into Nigeria, it has gone from minor crop to a major crop that accounts for between 40 -50% of all calories consumed in Southern and Central Nigeria. Nigeria now ranks the world largest producer of cassava, with current production estimated in 2009 at 36.8 million metric tons (FMARD, 2011). Systematic intervention in the cassava sector began in the early 1980s with the introduction of high yielding, bulking varieties resistant to Cassava Mosaic Disease (CMD) and Cassava Bacterial Blight (CBB); and the establishment of small scale processing facilities (Kormawa, 2003). These two interventions increased profit margin for producers alike and drove down prices of cassava food products for the rural and urban consumers.

There have been different cassava transformation initiatives, including the: Presidential initiative on cassava in 2003, which sought to position cassava as a commodity crop and foreign exchange earner, beyond its traditional role as a food crop; and the presidential cassava initiative of 2006, which raised the profile of cassava in Nigeria and demonstrated the immense potential of the country to increase production within a short time, which saw cassava production rising as high as 45 million metric tons, up from 35 million tons when the program started in 2003; and the current cassava transformation initiative implemented by the Hon. Minister of Agriculture, Dr. Akinwunmi Adesina, which seeks to build upon the gains in all the aforementioned efforts, by bringing development in the cassava sub-sector through value-addition to realize opportunities that exist in the industrial and export sectors for cassava, and build equally, a market and increase income by at least, US\$400 every year in 1.8 million farm facilities and to a million jobs to cassava sub-sector in Nigeria through doubling of production, processing, and marketing of cassava in the cassava growing belt of Nigeria over a period of four years.

The foregoing feat, notwithstanding, there is need for a greater awareness and sensitization of the citizens, particularly the farmers, on the gains of mass production of cassava, as it is only by this, that the people can appreciate the transformation program of the federal government and participate in the realization of the federal government objectives. It is worthy of note that, most campaign messages fail due to the type of media and methods of media used . Experience has equally shown that most campaign messages fail due to the fact that they are not planned and structured in line with the types of publics to be reached, the location of such publics, and the particular language and or dialect that can best get the attention and interest of such publics. It is equally noteworthy that, funding is as salient to any campaign messagesö planning and execution as blood is important to the body. Adequate and proper funding of campaign messages guarantee success while insufficient and misappropriated fund result to woeful failure of any campaign message. And these has been the lot in most federal government campaign programs, resulting from inadequate campaign programsö execution, wrong choice of media and methods of communication, hiring of unqualified personnel or experts to help design the campaign messages and select the right media and methods, and little or no disbursement of funds for the campaign

programs, as well as lack of, or irregular monitoring and evaluation of designed and executed campaign messages.

It therefore, behooves on the federal government through its various Ministries, Departments and Agencies (MDAs) to make the right choice, as it concerns adequacy and effectiveness of the awareness campaign, selection of the right media and methods of communication, selection of the right personnel (experts and professional), provision of adequate and appropriate fund, and regular and effective monitoring and evaluation of its communication campaign, if its campaign programs on cassava transformation must record huge and encouraging success.

1.2 Statement of Problem

Cassava no doubt has played and will continue to play a significant role on the growth and development of the agricultural sector of Nigeria, thereby, contributing immensely to the Gross Domestic Product (GDP) of the nation. Cassava has gone from minor crop to a major crop that accounts for between 40-50% of calories consumed in Southern and Central Nigeria. Nigeria today ranks the world's largest producers of cassava, with a current production estimate of 36.8 million in 2009 (FMARD, 2011).

Many cassava transformation initiatives have been introduced including: the presidential initiative of 2003, that sought to position cassava as a commodity crop and foreign exchange earner; and the presidential initiative on cassava of 2006, that raised the profile of cassava in Nigeria and demonstrated the immense potential of the country to increase production within a short time; and the current cassava transformation by the Federal Minister of Agriculture, that seeks to build upon the gains of the aforementioned efforts, by bringing development in the cassava sub-sector through value-addition to realize opportunities that exist in the industrial and export sectors for cassava, and build equally, a market and production support around farmers and processors by tackling existing technical and policy challenges, and increase income by at least, US\$400 every year in 1.8 million farming families and to a million jobs to the cassava sub-sector in Nigeria through doubling of production, processing, and marketing of cassava in the cassava growing regions of Nigeria.

As lofty and novel as these initiatives/programs may appear, the uncertain thing is the level of awareness of Nigerians, particularly the farmers and most especially the rural farmers; that is, if there is adequate publicity and campaign messages meant to inform, educate, and enlighten the relevant publics of the existence of such cassava transformation initiatives. Another issue of concern is if the campaign messages are effective and efficient to elicit positive responses from the farmers, particularly the rural farmers towards cassava production. The right media and methods of communication campaign is another factor that determines the permeability and penetration and subsequent appreciation and positive response to such cassava transformation initiatives/programs, which in this study, the media and methods of communication campaign employed by NRCRI to market the cassava transformation initiatives/programs shall be examined. Funding is another factor that may hinder effective and efficient communication campaigns, talking about campaign messagesö scope, period, permeability and or penetration, channels, experts hired, etc. Another factor that determines the success of any campaign programme is effective monitoring and evaluation, which are lacking in many organizations both public and private, which from experience, has shown to be a major reason why most government campaign programs fail. It is therefore, in the light of the foregoing that the research seeks to assess the federal governmentö communication campaign messages on the cassava transformation initiatives/programs at the National Root Crops Research Institute (NRCRI), Umudike, Abia State

1.3 Research Objectives

The main objective of this work is to assess the federal governmentö communication campaign on cassava transformation initiative as carried out by the National Root Crops Research Institute, Umudike, Abia State.

The following are the specific objectives:

- 1) To determine if the National Root Crops Research Institute, Umudike, significantly markets the cassava transformation initiative of the federal government.

- 2) To find out if there is communication campaign mix being employed by the National Root Crops Research Institute, Umudike, in marketing the cassava transformation initiative of the federal government.
- 3) To ascertain whether there are communication campaign models being employed by the National Root Crops Research Institute, Umudike, in marketing product.
- 4) To investigate whether the various communication campaign strategies that are being employed by the National Root Crops Research Institute, Umudike, have significantly enhanced the marketing of the cassava transformation initiatives of the federal government.

1.4 Research Questions

- 1) Does the National Root Crops Research Institute, Umudike, significantly market the cassava transformation campaign?
- 2) Is there communication campaign mix employed by the National Root Crops Research Institute, Umudike, in marketing the Cassava transformation initiatives of the federal government?
- 3) Are there communication campaign models employed by the National Root Crops Research Institute, Umudike, in marketing the Cassava transformation initiatives of the federal government?
- 4) Have the various communication campaign strategies employed by the National Root Crops Research Institute, Umudike, significantly enhanced the marketing of the Cassava transformation initiatives of the federal government?

1.5 Research Hypotheses

The following null hypotheses are postulated for this research work

1. The National Root Crops Research Institute, Umudike does not significantly market the cassava transformation initiative of the federal government.
2. There is no communication campaign mix being employed by National Root Crops Research Institute, Umudike, in marketing the Cassava transformation initiative of the federal government.

3. There are no communication campaign models being employed by the National Root Crops Research Institute, Umudike, in marketing the cassava transformation initiative of the federal government.
4. The various communication campaign mix and strategies being employed by the National Root Crops Research Institute, Umudike, have not significantly enhanced the marketing of the cassava transformation initiatives of the federal government.

1.6 Significance of the study

The study assesses the communication campaign programs/messages of the federal government on cassava transformation initiatives as carried out by the National Root Crops Research Institute, Umudike, Abia State. The study will therefore be significant in the following ways: It will practically aid the government through its ministries, departments, and agencies (MDAs) to know and appreciate the most effective and efficient campaign programs/messages/strategies to apply in marketing any of their products (ideas, events, plans, projects, achievements). It will enable the campaign managers of the federal government to understand and better appreciate the efficacy of proper planning, adequate execution of the campaign programs, through monitoring of the campaign programs, right media and methods of communication, selection of the right personnel to execute the campaign programs and adequate and appropriate funding, for the cassava transformation initiative to actualize its goals and objectives. It will equally help both the individual organizations, non-governmental and professional organizations to always be conscious of the kind of developmental campaign programs/messages that can help realize desired goals and objectives. Finally, the study will add theoretically, conceptually and empirically to the existing literature on developmental and marketing communication.

1.7 Scope of the study

This study assesses the federal government communication campaign programs on cassava transformation initiatives at the National Root Crops Research Institute (NRCRI), Umudike, Abia State. The geographical scope of this study includes the nine states covered by the National Root Crops Research Institute (NRCRI), Umudike, and these are: Abia State, Akwa-Ibom State, Anambra State, Bayelsa State, Cross-River State, Ebonyi State,

Enugu State, Imo State and Rivers State. The period covered by this research is 2003 ñ 2013, when the presidential initiative on cassava transformation was introduced and modified.

1.8 Limitation of the study

The study was limited by the following factors:

- 1. Finance:** The research was constrained by limited finance which involved the amount spent on production and administration of questionnaire copies, and transportation to and from the study organizations. Again, it was the desire of the researcher to go beyond the present scope of study but, for limitation of finance.
- 2. Time:** Time is another factor that hindered the earlier submissions for assessment and final completion of the research work.
- 3. Oral Interview:** The responses elicited from the management and staff of the National Root Crops Research Institute (NRCRI), Umudike, were not encouraging and impressive, as they considered most information that would have aided this research outcome confidential.
- 4. Questionnaire:** Not all questionnaire copies administered were returned, and some of those returned were incorrectly filled.

These limitations notwithstanding, the researcher believes that the research suffers no setback.

1.9 Operational Definition of Terms

1. Root Crops: These are plants whose roots can be eaten such as carrot, cassava, and cocoyam (Abdullahi, 2008).

2. Cassava Campaign: These are series of planned awareness creation programs geared toward turning cassava into a major player in local and international industries, by adopting improved production and processing technologies and organizing producers and processors into efficient value-added chains (Iweka, et al, 2002).

3. Gross Domestic Product: This is a measure of the economic production of a particular territory in financial capital terms over a specific time period (FMARD).

4. Research Institute: This is an organization that researches into genetic improvement, production, processing, utilization, storage and marketing of products (Ugwu and Kanu, 2012).

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CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

The purpose of review of related literature is to discover relevant variables that have been shown to be important in the problem area by previous studies. It is also aimed at obtaining useful information from previous studies that can be extended to the present study, yielding new information which is unknown to current readers (Tuckman 1978 cited in Obodoeze, 1996). This chapter is therefore divided into conceptual framework, theoretical framework and empirical framework

2.2 Conceptual Framework

2.2.1 An Overview of the Communication Campaign

Communication campaigns involving diverse topics and target audiences have been conducted for decades. Hyman and Sheatsley's (1947) synthesis, "Some reasons why information campaigns fail" is an early landmark in the literature. It is important to investigate how the history of campaign experience and evaluation research may inform mental health literacy programs. Rogers and Storey (1987) note that there is evidence that communication campaigns can be effective under certain conditions for specific audiences, but that years of campaign experience suggest many failures and unrealistic expectations about possible outcomes. Rogers and Storey (1987) observe that in the modern communication campaign, modest changes in audience behaviour are frequently achievable, and it is important for the campaign planner to set modest and realistic expectations about what can be achieved. They argue that a health promotion campaign might be considered successful or effective if about five percent of the target (or segmented) audience does adopt measurable changes.

In this context, it is important to define a communication campaign. It should be noted that the word communication is used to highlight the fact that not all campaigns necessarily involve mass media messages, or mass media messages in isolation, and that

communication campaigns may be small-scale in scope and audience reach. There is often confusion between the labels campaign, communication campaign or program, media or mass media campaign, and intervention. No particular definition adequately covers current practice, and there are many local variations of what is meant by these labels. Indeed, a variety of definitions exists in the literature but the following elements of a *communication* campaign are essential (Rogers and Storey 1987).

Firstly, a campaign is purposive. The specific outcomes can be extremely diverse ranging from individual level cognitive effects to societal or structural change.

Secondly, a communication campaign is aimed at a large audience. Rogers and Storey (1987) note that “large” is used to distinguish campaigns from interpersonal persuasive communications by one individual (or a few people) aiming to seek to influence only a few others.

Thirdly, communication campaigns have a specified time limit. This is not to state that all campaigns are short lived. For example, the initial Stanford Heart Disease Prevention Program ran for three years from 1972 to 1975, however follow-up investigations were conducted over decades (Pettegrew and Logan 1987).

The fourth point is that a communication campaign comprises a designed set of organized activities. This is most evident in message design and distribution. Messages are organized in terms of both form and content, and responsibility is taken for selecting appropriate communication channels and media. As Rogers and Storey (1987) point out, even those campaigns whose nature or goal is emancipation or participation involve organized message production and distribution.

In summary, the term communication campaign implies that:

It is planned to generate specific outcomes; in a relatively large number of individuals within a specified time period; and uses an organized set of communication activities.

2.2.2 Communication Campaign Strategies

Contemporary development communication specialists and organizations are presented with a multitude of communication approaches and techniques that they can adopt to

pursue specific programmatic goals. Some of the most widely used communication strategies include: entertainment-education; social marketing; peer education; interpersonal communication involving peers, marital partners and service providers; group communication; community actions; media advocacy; and listening to indigenous knowledge. Most of these methods are not only theory-based themselves but also have affinities with the three major theoretical traditions in development communication just discussed. Each strategy thus operates within a fairly tightly defined set of communication channels and spaces. The goals of communication intervention also vary across different strategies according to the conceptual premises of the underlying theoretical traditions. It should be noted, however, that multiple communication strategies are often employed simultaneously within a single initiative.

The communication strategies assessed in the reviewed studies can be classified into nine groups (Figure 1). This section highlights the characteristic ways in which the three most widely used groups of strategies—*interpersonal communication*, *entertainment-education/social marketing*, and *group communication*—were implemented in the field, as documented by the reviewed studies.

1. *Interpersonal Communication*

Interpersonal communication is a broad category of intervention strategies encompassing several formal and informal communication activities, including spousal communication, client-provider communication, peer-to-peer communication, among others.

Interpersonal communication appears to be an important programmatic tool for communication interventions drawing on the diffusion of innovations and participatory-approach traditions. Interpersonal communication is widely used also in communication interventions incorporating participatory approaches. However, the expected function of interpersonal communication in project design seems very distinct in participatory development communication.

1. Entertainment Education and Social Marketing

Entertainment education and social marketing are techniques typically associated with modernization/diffusion interventions (Waisbord 2005).

2. Group Communication

Group communication is a form of interpersonal communication and takes place in settings where people engage in discussion on matters of collective or communal importance. Communication dynamics of group communication is arguably even more horizontal than in simple interpersonal communication for it often calls for a participation of people with varying socio-economic backgrounds, expertise and power.

2.2.3 Communication Campaign Strategies for Rural Development

During the past two decades the purposeful application of media and communication support has assumed an increasingly important role in many facets of rural development. Much of it has been subsumed under the larger movement normally referred to as Development Support Communication (DSC), or more recently, Development Communication. Broadly defined by the U.S. AID, the process refers to "The application of existing communication technologies and media to the problems of development" (AID, 1984, p. i). FAO more precisely delimits DSC as **"The systematic utilization of appropriate communication channels and techniques to Increase people's participation In development and to Inform, motivate, and train rural populations, mainly at the grassroots level"** (Coldevin, 1987, p. 4). DSC sections are currently found in most international development agencies (although they may be subsumed under different titles), with spheres of project support ranging across agriculture, forestry, fisheries, health, nutrition and population activities, to women in development and functional literacy.

3. The idea of using media to assist Third-World development grew out of relatively consistent research findings demonstrating that focused, receiver oriented communication strategies could play a significant role in accelerating the rate of technology transfer, whether it be process or product - or both. Thus, as

communication technologies improved, became easier to use, and costs lowered, broadcasting and a variety of "small media" were increasingly harnessed to reach people at the village level. Prior to this, the main vehicle for linking scientific advances in agriculture, health and nutrition between researchers and rural adopters was the extension worker. Historically, however, their singular efforts have been limited by the thin spread of front line agents available in relation to the volume of people requiring information and training. Transportation difficulties have also tended to impede their outreach. In addition, effective communication with predominantly illiterate farmers was hampered by poor training in face-to-face communication techniques. Against this background, the use of media could accelerate awareness of, and adoption rates toward, recommended technologies through targeted information, motivational messages and training.

4. Nowadays in rural development, it is common to talk about **media categories** which are taken to include **broadcast** (television and especially radio), group (video, tape-slides, sound film-strips, audio-cassettes, overhead projections, flip-charts, posters, pamphlets, and leaflets; as well, traditional folk media such as puppets and live-theatre may be included), and **Interpersonal channels** (community leaders, contact farmers, extension workers). And DSC delivery strategies have been hierarchically ranked, in terms of complexity, from **interpersonal communication** through **radio** and **television broadcasting**, and **group media**, to **multi-channel campaigns**. This ranking also subsumes the notion that each strategy can be made more effective by incorporating that which precedes it. Radio broadcasts, for example, have much more impact if they are backstopped with authoritative, village based interpersonal sources, and group media can benefit from both radio and interpersonal communication support. Well designed communication campaigns usually involve broadcasting, village based group media, and intensively trained field workers. The general rule of thumb emerging from two decades of field experience is to use multiple channels, wherever possible, so that each medium reinforces and multiplies the importance of the others in an integrated network.

5. While there is no proven formula for selecting media for rural development, certain guidelines have emerged from practice. We know for instance that radio is particularly good at reaching a mass audience, quickly, with simple messages; print media like posters and pamphlets are good reminders or reinforcers of broadcasts, and interpersonal sources who provide opportunities for discussing information inputs are most useful for adding credibility to media content, shifting attitudes and prompting behavioural practice changes. Group media combinations have proven strikingly productive at the grassroots level. The advantage of this strategy is the establishment of a two-way flow of information with an audience and the possibility for immediate feedback as the presentation unfolds. Central points can be reemphasized, remedial information provided where needed, and discussions started with a view toward putting the recommended changes into practice. Particularly effective use has been made of small format video combined with simple, well illustrated pamphlets and field worker support for direct training of farmers and participatory community development (Fraser, 1987a; 1987b).

As mentioned earlier, all delivery strategies come to bear in the design of communication campaigns. In contrast to its founding "members" comprising field workers, broadcasting, and group media - which would normally function as part of an ongoing development support methodology - campaigns are usually carried out at a national or regional level, extend over a short time period, focus upon a specific topic of high development priority, and have a limited set of objectives. Most take advantage of multi-media impact and intensively trained executives. Other devices such as jackets, and T-shirts bearing campaign symbols are sometimes added. Often these campaigns are kicked off by the President or Prime Minister of the country.

The primary purpose of most campaigns is to stimulate action on problems requiring short-term or simple solutions which in turn often serve as the thin-end of the wedge toward embarking on broader, long term development goals. As such, they are normally information-intense with messages being repeated over and over in high frequency" advertising fashion, using a diversity of channel formats from

radio spots and jingles to field worker demonstrations. An important feature of the campaign is to ensure that it proceeds hand in glove with the availability of field inputs associated with the technological product or process being advocated. Without this essential component, not only will the credibility of an on-going campaign be damaged, but in all likelihood attitudes to regular rural communication services will be affected as well.

2.2.4 Prospects and Challenges of Development Communication Initiatives

Adopted in 2000, the UN Millennium Development Goals (MDGs) reiterate the urgency of solving the developing world's economic, educational, health, and human rights problems – problems the international community has failed to resolve in the last fifty years. By putting poverty, health and other human development issues at the center of the global development agenda for the first time (Fukuda-Parr 2004), MDGs present unique and important opportunities for the development communication community to showcase communication strategies as an effective interface capable of making development programs more communicative, hence, effective. Communication can make development interventions more vernacular, and more sensible to specific local contexts. Development communication can also make development initiatives scalable by employing different communication techniques and devices that address varying spatial requirements for local, regional, national and international levels of action. Further, communication can create a favorable ecology for development programs by re-linking and facilitating interactions between economically, politically and culturally disconnected groups and ideas between indigenous knowledge and science, elite national policymakers and rural communities, donor agencies and local NGOs, men and women, and didactic pedagogy and participation.

Moreover, going beyond the notion that communication essentially plays a supportive role assisting the core development efforts, some development communication practitioners have started to recognize communication as the objective in and of itself, seeing that communication empowers people (Melkote 1991); communication enables expression and dialog; raises awareness of socio-structural problems; and fosters self-reflection among marginalized and disadvantaged populations. However, a greater and more effective

integration of communication into development programs is only possible if its strategic values are widely recognized. In reality, development projects tend to relegate communication components to secondary importance and earmark relatively small budgets (see Deane 2004; Waisbord and Larson 2005). All too often, communication strategies are expressed in too generic a form in project designs. Under-utilization of communication living only implicit and common sensual roles to communication without associating it with specific mandates on contents, channels, forms, actors, timing and so forth, based on firm theoretical underpinnings is not an uncommon practice in international assistance programs perennially strained by limited budget and human resources.

2.2.5 Generalizations for Communication Campaign Planners

Analyses conducted by Rice and Atkin (1989) and by Pettegrew and Logan (1987) support the following generalizations by Rogers and Storey (1987). In a very real sense, these generalizations should be considered as guidelines for communication campaign planners.

1. Widespread exposure to campaign messages is a necessary ingredient in a campaign's success.
2. The mass media can play an important role in creating awareness and knowledge, in stimulating interpersonal communication, and in recruiting individuals to participate in campaign activities.
3. Interpersonal communication through peer networks is very important in leading to and maintaining behaviour change.
4. The perceived credibility of a communication source or channel enhances the effectiveness of a communication campaign.
5. Formative evaluation is as important as summative evaluation following the conclusion of the campaign.

Formative research involves evaluating aspects of the campaign, especially message design and audiences understandings, in the planning stages. This work can improve the effectiveness of campaigns by producing messages that are

specific to the desired behavioural change. The development of the American educational television series, *Sesame Street*, is a classic example in the research literature (Lesser 1974).

6. Campaign appeals that are socially distant from audiences are not effective.
7. Campaigns promoting prevention are less likely to be successful than those with immediate positive consequences.
8. Audience segmentation strategies can improve campaign effectiveness by targeting specific messages to particular audiences.
9. Timeliness and accessibility of media and interpersonal messages can contribute to a campaign's success.

2.2.6 A Methodology for Campaign Design

In addition to the success rates associated with technology transfer, a positive contribution of previous projects has been in the continual refinement of a methodology for planning, implementing and evaluating development support communication. The "learning by doing" approach has currently evolved into a comprehensive DSC Process Model developed by FAO during 1987 which, while being flexible enough to accommodate most types of rural communication activities, is particularly appropriate for multi-media campaigns. Broken down into its essential elements, the systematic approach comprises four stages as follows:

1. Needs assessment / information gathering

Determine key development priorities through field surveys, community consensus, interviews with field specialists and subject matter specialists; assess media channels available to potential target groups; ascertain whether technology transfer inputs are readily available.

2. Decision making / strategy development

Prioritize needs, select most important and establish development or project objectives to be addressed; identify target groups, carry out baseline knowledge, attitudes, practices

(KAP) survey, conduct focus group sessions, set specific communication campaign objectives, determine multi-media mix and message design strategies.

3. Implementation

Draw up action plan, produce and field test samples of media materials, revise and finalise materials, train field staff in content and use of materials, distribute materials, and monitor campaign as it unfolds.

4. Evaluation

Carry out small scale field evaluations at strategic points during campaign to suggest where "in-course" changes may be warranted; conduct full scale post-campaign impact evaluation survey and use as feed-forward for future campaigns.

The components of the model were initially tested in Sierra Leone and formed the basis for the series of campaigns in Lesotho. Its applicability is intended to range across a variety of rural development themes within agriculture, fisheries and forestry as well as several FAO executed projects for UNFPA which involve information/communication for population activities.

An important point to be stressed in the model is that it begins with a field generated, "bottom-up" needs analysis with potential target beneficiaries; setting specific development or project goals is thus made on the basis of direct input from those who will be directly involved. The implicit understanding here is that communication support is most effective when it is included as part of early project planning, rather than being drawn into the operation as an Add feature at some point during the implementation phase. Formulating specific goals on the basis of information about people's real needs, and building in receiver oriented communication as a project unfolds, are proven ingredients in technology transfer success stories. In this participative process, rural people become not only recipients, but partners in development.

The most difficult, and at the same time one of the most important of all activities in the communication support process, is the target audience analysis (KAP or knowledge-attitudes practices indices; literacy levels; access to, use of, and preferred communication

channels) since this serves both production and training objectives. At the outset it sets the baseline for establishing "success indicators" and later validation of the project's achievements. It also provides valuable guidelines for initial production and pre-testing of materials in terms of print and visual literacy levels; the choice of medium or media combination which is likely to produce the best results; and the identification of weak levels of knowledge, negative attitudes, and inappropriate practices. Briefing or training sessions for field workers can also be focused on real information needs and specific characteristics of the intended target audiences, rather than formulating workshop goals and contents based upon the best judgments of an urban planning team. As the campaign unfolds, monitoring and small scale field evaluations can accurately point to where emphasis should be redirected, or where content units need reinforcement. Finally, post-campaign impact evaluations can focus on both quantitative and qualitative results for comparison with before-campaign or baseline data, and as such, function as accurate "feed forward" for sustaining the effects of a given campaign, or planning for carrying out new ones.

The campaign methodology advocated by FAO also includes both a "Management Plan" and a "Staff Training Plan". Reference will be made to these components in describing the Lesotho campaigns, but our main focus will be on the DSC Process Model as it was applied over the 18 months of the case study.

Evaluating Communication Campaigns

Evaluation has been flagged as one of the major challenges facing communication Professionals today. Assessing the impact and value of communication activities, gaining organizational support or simply learning how to work better are amongst the key benefits of evaluation.

An Adapted Approach

Evaluating communication activities built around programs or campaigns requires an adapted approach to evaluation.

What is the purpose? Most communication campaigns aims to change individual attitudes and behaviours or to mobilize public and decision-maker support for policy change - or a

combination of both. A visual representation of the pathway between communication activities, the intended outputs, outcomes and ultimate impact is important in pinpointing the evaluation.

Activities	Output	Outcome	Impact
Media	Production	Awareness	
Web	of material	Opinions	
Coalitions	Media	Attitudes	Behaviour
		Behaviour	changes
Advocacy	coverage.		
Activism	Events held.		
Etc.	Web traffic	Mobilization	
	analysis.	Public support	Policy
	Etc.	Policymaker	changes
		support	

Figure 2.1: Generalized pathway for communications Campaign

What should be evaluated? Most communication evaluation focuses on output: measuring communication performance (e.g. number of press releases issued, events held, etc.). Although this can be useful initial feedback, far more important is to measure outcomes: did communication activities result in any opinion, attitude and/or behaviour change amongst targeted audiences? The aim of evaluation may not always be to prove communication efforts definitely caused change, but to assess the assumptions and quality of the communication activities.

How to evaluate? Methods to evaluate communication campaigns vary according to the objectives set and activities used. Following is an overview of evaluation methods relevant to program communications:

Outcome/impact:	Quality of communication	Opinions Attitudes	Behaviour	Policy change
Method:				
Web analytics	<	<	<	
Short polls	<	<		
Focus groups	<	<	<	
□ In-depth Interviews		<	<	
Panel studies		<	<	
Surveys		<	<	
Control group studies			<	
Tracking mechanism				<
Chronological monitoring				<

Figure 2.2: Methods to evaluate communication campaign

Cost-effective evaluation

Owl Research & Evaluation supports organizations in analyzing, assessing and evaluating activities in the communications, training/events and development fields.

Our key services include:

- Developing evaluation methodologies and guidelines
- Evaluating communication activities and campaigns
- Evaluating training programmes and events
- Supporting evaluation projects with research design, management and analysis.

2.2.7 Communication Campaign Mix for reaching Target Audience

An organization's publics are located at different places that are diverse and scattered across the various territories where the needed products and services are sold. Communication campaign requires reaching the target public with special messages for promotions using relevant channels of communication. The media as channels of communication should be easily accessible, available, and affordable and directed at the target public. The target publics are those of the internal within an organization and others that are external to the organization that is reached with the promotional messages (Nwosu, 2007).

Figure 2.3 Communication Campaign Mix for reaching Target Audience

Communication Campaign Strategies	Benefits	Caution
Manuals	Special and particular knowledge for operation	Routinised, repetitive and retard initiative
Bulletins	Easy to comprehend, special and specific information, guidelines	Brief and scanty information
Information Racks	Help to stock information with printed tracts, journals, magazines Bulletins and news	May not be accessible to all the staff, contain limited stock of news material

	flyers	
Vides films, video discs	Detailed explanation Of events, visual and audio power, could be used for training	Expensive to produce and may not be easily obtainable
Newsletters	Easy to produce and circulate and may be used to publicize event	Limited quantity and for the executives rather than for all the staff
Pressure Groups and Grapevine	Strong links among target groups. Connected to the authority through informal sources	Could be destructive and highly unreliable
Circulars and memos	Information for garget groups could be easily circulated, instructive	May not be read by the individual but dumped
Close circuit television	Usually informative, highly reliable and aimed at strictly target audience, secretive and exclusive	Expensive and exclusive, highly skewed for the target but not potential customers
Word of mouth	Fast and inter-personal	May be unreliable
Board and committee meetings	Facilitate approvals for use of other channels	Facilitate approvals for use of other channels
Newspapers	Circulates widely, storage of information, transfer of information among the public, large target audience, affordable, colour print for better appeal, pictures as convincing evidence	High urban related, language barrier, target of audience may not be concentrated on but wider public, easily forgotten or memory lost of information
News magazines	Wide audience, concentrates on target groups	Limited circulation

News Journals	Highly technical and directed at target groups	Exclusive to few members of the public
Televisions	Fast information spread, audio and video power, multilingual, colour appeal and national and local network	Limited in quantity and ownership, urban inclined, easily affected by power fluctuation
Radio	Audio power, language and cultural, reach and coverage spread	Repetitive and less attractive
Billboards, posters, handbill	Highly visible	Easily damaged
Word of mouth, Grapevine	Spread fast	Not reliable and no source
News release, press conference, AGMs	Specific information, educative	Highly limited
Pressure groups	Aggressive group related	Aggressive and counter action

Source: Nwosu, I. E. (2007): óPrinciples, Methods, Models and Theories of Sustainable Human Development: An Afro Centric Overview and Introduction of the Synergistic Communication for Development (SCD) Strategyô in Nwosu, I.E, Fab-Ukozor, N.T and Nwodu, L.C (eds), (2007): *Communication for Sustainable Human Development: A Multi-Perspective Approach*; Enugu: ACCE.

2.2.8 The Agricultural Transformation Agenda of the Federal Government of Nigeria

The agricultural transformation agenda of the Federal Ministry of Agriculture and Rural Development is directly building on President Good luck Jonathan's transformation agenda. Agriculture is an important sector of the economy with high potentials for employment generation, food security and poverty reduction. However, these potentials have remained largely untapped which has led to the dwindling performance of the sector both domestically and in the international trade over years (FMARD, 2011). As at 1961, Nigeria was the leading exporter of groundnut with a world's share of 42%. The country also had 27% of the world's palm oil export, 18% of cocoa and 1.4% of cotton as the major West African cotton exporter. This glory however declined over years hence Nigeria dominance in the export of groundnut was eclipsed by China, United States of America (USA) and Argentina as at 2008. Indonesia and Malaysia took over in palm oil; Cote d'Ivoire and Ghana also become the leading exporter of cocoa while Mali and Burkina Faso led cotton exports (FMARD, 2011).

The competitors maintained their dominance due to strong marketing organizations that linked the farmers to markets and provided support in the form of improved planting material, fertilizer, credit and rural infrastructure. Low productivity in Nigeria over the years compared to leading countries like Malaysia, Thailand, Indonesia, and Brazil has been largely due to low fertilizer and improved seed utilization as well as inadequate government expenditure and the inability to compete with others. Average fertilizer use in Nigeria is 13kg/hectare compares to World average of 100kg/hectare and 150kg/hectare for Asia. Only 5% of the farmers could access the improved seeds and operates with only 10 tractors per 100 hectares compared to 241 tractors per 100 hectares in Indonesia (FMARD, 2011). Consequently it is estimated that Nigeria has lost a US\$10 Billion (1.6 Trillion Naira) annual export opportunity from groundnut, palm oil, cocoa and cotton alone due to continuous declines and stagnations in their exports. Thus food imports are growing at an unsustainable rate of 11% per annum. Nigeria was the world largest importer of United States hard red and white winter wheat with an annual import of 635 billions of Naira. It is also the second largest importer of rice (356 billions of Naira), sugar (217 billions of Naira) and fish (97 billions of Naira) (FMARD, 2011). The recent willingness

of exporters to ban exports could jeopardize Nigeria's food security. Besides domestic food availability expected from Nigeria agriculture; the problem of increasing unemployment rate especially among the youths would also be solved if supported. This is based on the fact that the North Central region (breadbasket) of the country where agriculture is the primary occupation had the lowest employment rate in the country.

The vision in the transformation strategy is to achieve a hunger-free Nigeria through an agricultural sector that drives income growth, accelerates achievement of food and nutritional security, generates employment and transforms Nigeria into a leading player in global food markets to grow wealth for millions of farmers (FMARD, 2011). In order to achieve this vision, the usual approach to the agricultural sector would change. Fertilizer procurement and distribution, marketing institutions, financial value chains and agricultural investment framework would also be restructured. The fertilizer strategy is to stimulate a thriving private sector fertilizer industry sequel to inefficiency in the government distribution system and wastage of resources (FMARD, 2011).

The subsistence farmers would also be moved from their high poverty level through market oriented/market surplus facilitated by Nigerian Incentive-based Risk Sharing for Agricultural Lending (NIRSAL) into a commercialized system that would facilitate trade and competitiveness. This would be achieved through the Growth Enhancement Support (GES) investment that is targeted at 20 million farmers at an estimated cost per farmer per year of 5,000 naira. The transformation of the sector would be executed through the Agricultural Transformation Implementation Council (ATIC) with President/Vice President at the apex and Federal Ministry of Agriculture and Rural Development (FMARD) at the centre stage for coordination. Included implementation groups are Agricultural Investment Transformation Implementation Group (AITEG), Agricultural Value Chain Transformation Implementation Group (AVCTEG), and NIRSAL Implementation Group.

Agricultural Industry Advisory Group however, determines and institutionalizes policy support to the agricultural transformation agenda (FMARD, 2011). These different groups

have various major roles and responsibilities towards the achievement of the goals of the transformation agenda.

Transformation action plan for some priority agricultural commodities will be focused in the six geopolitical zones of the country. The commodities are rice, cassava, sorghum, cocoa, cotton, maize, dairy, beef, leather, poultry, oil palm, fisheries as well as agricultural extension. This would be carried out through the value chains of each of the commodities while recognizing the roles of the actors/stakeholders along the nodes of the chain, inputs requirements in achieving production targets, constraints faced and expected output (FMARD, 2011). The main target is to grow the agricultural sector through the various commodities and also to generate employment opportunities.

For instance, rice transformation plan would involve massive local production of milled rice which will be aimed at substituting parboiled (imported) rice; the expectation is that with the advent of high quality lower cost milled rice, a significant portion of demand in the domestic rice market will shift from parboiled rice to milled rice. A projected decline in demand for high quality parboiled rice from 1.9M metric tons to 1.3M metric tons between 2011-2015 and a shift in demand for milled rice from 0M metric ton in 2011 to 1.1M in 2015 is expected (FMARD, 2011).

The crucial inputs are land, improved seeds and fertilizer e.g. the cultivable lowland rice farm will increase from about 50,000 hectares in 2011 to 1.2M hectares by 2014, while that of irrigated rice farm is estimated to be 300,000 hectares by 2015. Job creation in rice production is expected to be through primary production, plantation establishment and value chain with an estimated 1 Million jobs to be created by 2015. Similarly, the transformation in cassava is expected to increase the yield of cassava tuber from 12.5 metric tons/hectare as at 2010 to 25 metric tons/hectare by 2015 with 1.2million jobs. The yield of sorghum would increase 0.75metric tons per hectare to 2.5 metric tons per hectare with 150,000 jobs. Expected 360,000 jobs is projected with increment in cocoa yield from 300Kg/ha to 500Kg/ha (FMARD, 2011).

Towards achieving a successful agricultural transformation, policies regarding agriculture, financial services, industry and market development need review. For instance, in terms of fiscal policies; there should be zero tariffs (custom, excise and value added) for import of agricultural equipment and agro-processing equipment.

Expected initial impacts from the transformation include provision of over 3.5 million jobs within five value chain rice, cassava, sorghum, cocoa and cotton, over 300 billion Naira (US\$2 Billion) additional income in the hands of Nigerian farmers and food security by increasing production of key food staples by 20 Million metric tons (FMARD, 2011).

2.2.9 An Overview of the Action Plan for Cassava Transformation in Nigeria Introduction

Cassava transformation under the Agricultural Transformation Program of President Goodluck Jonathan and being implemented by the Honorable Minister of Agriculture, Dr Akin Adesina, seeks to build upon the gains in all aforementioned efforts. The new cassava transformation will drive development in the cassava sector through value-addition to realize opportunities that exist in the industrial and export sectors for cassava. The plan will build market and production support around farmers and processors by tackling existing technical and policy challenges.

The main goal of the action plan is to increase income by at least US\$400 every year in 1.8 million farm families and to add a million jobs to the Cassava Sub-Sector in Nigeria through a doubling of production, processing, and marketing of cassava in the cassava growing belt of Nigeria over a period of four years.

The objectives of the action plan includes: to link demand for cassava-based products in the industrial, export, and traditional food sectors to reliable supply by an introduction of a package of improved production, supply chain management, favorable policies, and advocacy with end-users; to raise productivity through the demonstration and adoption of improved production technologies by clusters of farmers and the establishment of a network of agro dealers to supply the needed inputs of: fertilizer, stem cuttings of improved varieties, and herbicide; to build around farm clusters market institutions for the

long term sustainable development of the cassava sector through the establishment of a Cassava Market and Trade Development Corporation (CMTDC); to implement government policies that incentivize use of cassava for import substitutions and create input markets by working closely with the Ministries of Agriculture, Finance, Commerce and the National Assembly; to continually monitor and evaluate progress to identify the most promising interventions for continuous improvement of strategies to reach the end goal.

The expected outputs of the action plan includes: strong value added chains of starch, HQCF, sweeteners, dried chips, high quality garri, and fuel ethanol in Nigeria; a doubling of average cassava productivity from 12 to 25 ton/ha in target clusters by 2014; generation of one million jobs in the rural areas of Nigeria over the next four years of the program; an increase in income of 1.8 million participating farm families by US\$450 every year; strong market institutions establish for long term sustainability of the cassava sub-sector.

The time-line for the action plan is 4 years while the budget summary is NGN 4,190,490,000 (tentative, in preparation)

The Opportunity

Cassava, in its processed form, is a reliable and convenient source of food for tens of millions of rural and urban dwellers in Nigeria. It is estimated that more than 90% of cassava production is processed into food (Nweke et al. 2001; Philip et al, 2006). But a significant industrial demand exists for cassava, primarily as substitution for imported raw materials and semi-finished products. There is a potential demand of 250,000 ton/year in the High Quality Cassava Flour (HQCF), primarily from 10% replacement in bread flour and for use in bouillon, noodles, and the adhesive industry (dextrins); a demand equivalent of 1.15 million tons of fresh roots. Similarly, demand for native and modified starches exceeds 230,000 tons/year in the food, paint, and pharmaceutical industries, another million tons of fresh roots. In the sweetener industry, an annual demand of 150,000 tons exists for high fructose syrup, as part replacement for imported sugar, and 40,000 tons/year for glucose (40,000ton/year); this requires an additional 950,000 tons of fresh roots.

The dried cassava chips value-chain has a potential demand of 900,000 tons per annum with 300,000 tons going to the regional food market, an estimated 80,000 tons/year to the local animal feed market, and 520,000 tons destined for the China export market. The dried chips market requires 3.4 million tons of fresh roots. Lastly, Nigeria has adopted the policy of blending gasoline with 10% ethanol, the E-10 policy. These represent a potential one billion liter per year market for fuel ethanol and, a potential demand of 2.3 million tons of fresh roots, assuming 50% of feedstock of E-10 comes from cassava. Cassava, Sugarcane, and sweet sorghum are currently the most economic feedstock for fuel ethanol production in Nigeria but cassava is by far the most widely grown (NNPC 2011).

Garri is a widely consumed Nigerian food; an estimated 4.2 million tons were produced in 2009 (NBS 2010). However, poor packaging and inconsistent quality limits Nigeria's participation in lucrative export markets in North America and Europe targeted at West Africans in the diaspora, and from large supermarkets. Where garri has been packaged well and is of good quality, it finds a ready market in large supermarkets patronized by middle class Nigerians and beyond the shores of the country. The size of the high quality garri market is estimated conservatively to be 455,000 tons/ per year, 65,000 tons from export to the diaspora and 390,000 demand from super markets, equivalent to 2.73 million tons of fresh roots per year. Combined, opportunities for cassava in the industrial, export, and retail industries comes to 12.7 million tons of fresh roots from 510,337 ha of land; creating over a million jobs (Figure 2.4).

Figure 2.4: Estimated demand of cassava in the industrial and export markets, acreage required and estimated number of jobs created (assumes one direct job per hectare for production and one direct job in the processing and other downstream sectors).

Value-Added Chain	Estimated Demand	Fresh root equivalent to meet estimated demand (metric tons)	Acreage required (25ton/ha)	Number of Job created (one direct job on-farm per ha and one off-farm)
Starch	230,000 tons	1,150,000	46,000	92,000
Flour	250,000 tons	1,000,000	40,400	80,000
*Sweeteners	190,000 tons	950,000	38,000	76,000
Dried chips for export and animal feed	900,000 tons	3,360,000	134,400	268,560
*Fuel Ethanol (E-10)	0.5 billion liters	3,571,428	142,857	285,714

High quality garri for export and supermarkets	455,000 tons	2,730,000	109,200	218,400
Total		12,758,429	510,337	1,020,674

*Assumes 50% replacement of imported sugar in the Sweetener industry

*Assumes 50% from cassava as feedstock

The Challenges

Thailand is the largest exporter of cassava products, exporting a little under US\$1billion of cassava products in 2009, and has efficient cassava value-added chains. A comparison of the Nigerian and Thai cassava sectors reveals the Nigerian cassava sector is plagued by low productivity; average yields are 11.7ton/ha, compared to 22tons/ha in Thailand (Figure 2.5). Thai cassava yields have increased at an average of 1.7% every year in the last 15 years while yields in Nigeria have stagnated (FAOSTAT 2010). Low productivity leads to high costs per unit production, costs of root production per ton is US\$10 per ton higher in Nigeria than in Thailand, and an inability of Nigerian cassava products to compete with imported substitutes leading to a lack of demand for cassava by industrial users who prefer to import raw materials. Higher productivity in Thailand is mostly due to higher incidence of fertilizer use and mechanization. There is little or no use of chemical fertilizer in cassava production in Nigeria and farming is by manual labor, especially weeding, which is a major cost of cassava production. In Thailand, weeding is done by hand-controlled tractor (cultivator) or herbicide.

Figure 2.5: Characteristics of cassava production in Nigeria and Thailand

	Nigeria	Thailand
Cassava production ('000t) 2009	36,804	30,088
Cassava harvested area ('000ha)		
2009	3,126	1,326
Cassava Yields (t/ha) 2009	11.7	22.7
Utilization ñ Main	Garri (60%)	Starch - native and modified (40%)
-Major other uses	Fufu (20%)	Fuel Ethanol (20%)
	Lafun (10%)	Chips/pellets (40%)
	Tapioca - 5%	
	Starch- native	
	(3%)	
	Animal feed (2%)	
Farm Size (ha/Farm)	1-2	4-5
Cassava area (Ha/farm)	0.5-1	2-3
Crop System (%) - monocrop	10	95
-intercrop	90	5
Time of Planting	Apr-June	Apr-May
Land Preparation	Manual/tractor	Tractor
Weed control	Manual	Tractor/herbicide/manual
Fertilization -organic	none	medium

-chemical	very little	medium
Labor costs (US\$/day)	3-4	4-5
Production costs (US\$/ha)	450-900	650-800
Production costs (US\$/t fresh roots)	37.99	28.68

Sources: FAOSTAT 2009; IITA cassava handbook; Reinhardt Howeler (CIAT, Bangkok), TTDI

The Thai cassava sector is dominated by large processors that require 10-30tons of fresh roots per hour and have therefore established efficient supply chains. The principal users of cassava in Nigeria, about 70% every year, are village-level garri processors that require limited quantities of fresh roots per day. Large processing plants in Nigeria who need larger quantities are faced with high transaction costs, of collecting small amounts of cassava over a large area with bad roads, and adversarial relationships between the producer and processor. These processing plants therefore operate below capacity while a significant percentage of farmers are left with unsold harvest.

Nigerian cassava farmers produce for an inelastic food market. This leads to wide swings of prices every other harvest, in the absence of a minimum price guarantee schemes by government. For example, the price of a ton of cassava in 2007 was N5,000-N6,000 in central Nigeria due to overproduction, partly in response to an appeal to farmers by the last Presidential cassava initiative to increase cassava production for new markets of high quality cassava flour, starch, and chips, markets that were only partly achieved. Because of the depressed prices, many farmers switched to other crops and production output fell. By March and August 2009 cassava sold at farm gate in most of central Nigeria for N12,000 ñ N15,000 per metric ton; given the good prices many farmers went back to cassava production, leading to an overproduction. In 2011 cassava roots are selling for between N5,000 ñ N8,000 a ton; essentially completing the burst-boom cycle of cassava that occurs

every three years; cassava in Nigeria is a 15-18 months harvest and two crop cycles is 3 years.

Other challenges are policy inconsistencies, for example a lack of enforcement of the 10% inclusion of cassava flour in bread flour has left two large and hundreds of small processors with unsold inventories and farmers with nowhere to sell their cassava harvest. Additional policies are needed to create reliable demand and help strengthen cassava value-added chains still very much in its infancy. They include: provision of incentives for users of cassava products, cash back incentives to exporters, and a levy on imports of competing products. Lastly, government policies that ensure reliable supply, such as fertilizer availability and the credit to farmers to purchase the fertilizer also need to be promulgated.

The overarching strategy of the cassava transformation is to turn the cassava sector in Nigeria into a major player in local and international Starch, Sweeteners, Ethanol, HQCF, and dried Chips industries by adopting improved production and processing technologies, and organizing producers and processors into efficient value-added chains. The strategy consists of two pillars:

1. Incentivize the formation of clusters of farmers around small and large scale processing factories and disseminate to them improved production packages to increase productivity.
2. Ensure farmers a market for their cassava roots via the creation of effective supply chains to existing cassava processing factories, and establish factories. Also, establish a guaranteed minimum price scheme with government as buyers of last resort.

A key part of the cassava transformation plan is organizing farmers into clusters of 5-50 ha for ease of mechanization, adoption of improved technology, and coordination of supply. A rapid survey of the cassava sector will be conducted to identify locations of processing and production.

Following, farmers will be invited to organize themselves into clusters, to facilitate acquisition of modern method of cassava production, in exchange for access to inputs, training, and a guaranteed market. Farmers will receive training, prior to and during planting, in crop management and integrated soil fertility management (ISFM) practices that they have been are specific to their locations. Lastly, working with the Growth Enhancement Support program of the Federal Ministry of Agriculture, key input agro dealers will be identified and linked to farmer groups. Financing for farmer groups and processors will be through the Nigeria Incentive-based Risk sharing for Agricultural Lending (NIRSAL).

The action plan will concentrate on import substitution for high value products that can be made from cassava like HQCF, starch and sweeteners, while positioning itself to take advantage of opportunities in the export sector. To successfully use cassava as substitutes for imported industrial raw materials, the Nigerian cassava value-added chain has to compete with the corn starch and corn sweeteners, from the US and Brazil, and with wheat flour from the US that are produced with reliable electricity, water, government subsidies, guaranteed price, and have highly efficient supply chains for evacuating the product. Cassava value chains in Nigeria will have to evolve efficient production and processing capabilities in regions with good infrastructure, the staple crop processing zones (SCPZ), and backed by policies that help it compete.

Policy interventions to support the industry include: market policies, such as 10% Cassava Flour substitution for bread wheat flour and blending and 10% ethanol in petrol (E-10), and fiscal policies, including tax holidays for investors putting processing plants in staple crop processing zones (SCPZ). Other policies include increased import levies on commodities that Nigeria can produce, for example starch, sugar and wheat flour, incentives for investors establishing blending plants for ethanol, and guaranteed minimum price for cassava products.

Roles and responsibilities will be defined for the public and private sectors. A Cassava Trade and Marketing Development Corporation (CTMDC) run by the private sector will build market institutions around farmers. The Federal ministry of agriculture will be

responsible for technology development and transfer, in collaboration with State governments and non-government organizations, who will provide extension support.

Experience from around the world has shown that crop campaigns to raise productivity require a close partnership with research and development of enabling technologies. The transformation plan will invest significantly in the development of new varieties, improved production methods, disease and pest diagnostic surveys, and the development of novel cassava products. The transformation plan will support the production of high starch and early varieties ñ 8-10 month crop ñ, and varieties with increased nutrition to enhance health status, especially children, of consumers.

Strategic applied research will be conducted to identify or develop improved agronomic practices for cassava, a combination of best varieties, fertilizer recommendations, cultural practices, and integrated pest and disease management (IPDM), as well as suitable crop rotations or crop/livestock production systems. Cassava has high disease and pest incidence roots. We have to stay a step ahead of the pests and diseases of cassava, we will build disease diagnostic and pest surveys into the R&D plan. Considerable effort will also be expended on novel products, for example cassava bread made with 100% cassava flour, that increase the overall profitability of the value added chain.

Vision of success and Objectives

Within four years, an increase in cassava production by 12 million tons through intensification of production with yield increase from 11.7tons/ha to 25ton/ha on 510,337 ha of cassava clustered around large, medium, and small scale processing plants. By the end of this phase we will demonstrate a US\$450 increase/year in income of one million rural farming households that produce cassava and a total increase of US\$810 million/year contribution of the cassava sector to the country's GDP.

OBJECTIVES:

1. Link demand for cassava-based products in the industrial, export, and traditional food sectors to reliable supply by an introduction of a package of improved production, supply chain management, favorable policies, and advocacy with end-users.

2. Raise productivity through the demonstration and adoption of improved production technologies by clusters of farmers and the establishment of a network of agro dealers to supply the needed inputs of: fertilizer, stem cuttings of improved varieties, and herbicide.
3. Build around farm clusters market institutions for the long term sustainable development of the cassava sector through the establishment of a Cassava Market and Trade Development Corporation (CMTDC).
4. Implement government policies that incentivize use of cassava for import substitutions and create input markets by working closely with the Ministries of Agriculture, Finance, Commerce and the National Assembly.
5. Continually monitor and evaluate progress to identify the most promising interventions for continuous improvement of strategies to reach the end goal.

CASSAVA VALUE-ADDED CHAINS

High Quality Cassava Flour (HQCF)

High Quality Cassava Flour (HQCF) is produced by grating peeled fresh cassava roots, de-watering to a final moisture content of 35-45%, followed by drying in a flash dryer, and milling with a hammer mill. HQCF is used in 10% replacement of wheat flour in bread, in bouillon seasoning cubes, noodles, and in the adhesive industry (dextrins); the bulk of cassava roots that goes into HQCF production come from small holder farmers close to the processing plants.

There are two large processors of HQCF in Nigeria, with installed capacity of >10,000 tons of flour per annum (>50ton/day), namely Thai farms and DATCO. They each have different supply chain models. Thai Farm International, with an installed capacity of 60t of HQCF/day (18,000t/year), buys roots directly from about 1,000 farmers, who deliver surplus cassava roots (as they produce mainly for home consumption) to their factory in Ogun State. Thai farms recovery rate is 27 to 28% (3.6 to1), which is due in part to the use

of mechanical peelers and efficient rasps; they currently are working at 20 to 30% capacity, due to failure of wheat millers to purchase HQCF.

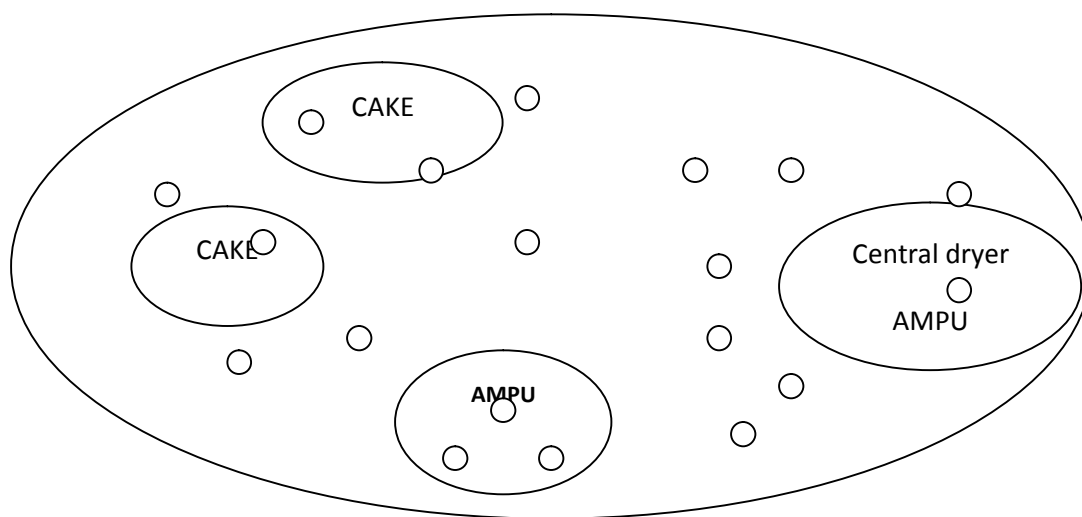


Figure 2.6: DATCO HQCF supply chain involving a mobile cassava processor, the Automated Mobile Processing Units (AMPU). It produces cassava cake - that is of high quality & with a shelf life of 5-7 days. The cake is transported by truck to a central dryer.

The second HQCF processor is DATCO; the company has developed a split processing technology for cassava consisting of wet processing at the farm level using an Automated Mobile Processing Units (AMPU) followed by drying and milling of the wet cassava cake at a central location (Figure 2.6). The company currently operates in Osun, Taraba, Rivers and Benue States. DATCO has a combined installed capacity of 40,000 ton of HQCF per year.

In addition to the two large mills, there is a medium sized mill, Godoligo farms located in Obudu, Cross River State, with an installed capacity of 5ton of HQCF per day or 1,500 tons/year. Godoligo farm obtains its raw materials from a 400ha nucleus cassava farm and 400 ha of out- grower farms. There are 103 small HQCF processing plants with a capacity of 1-2 tons/day.

Eighty five of these SMEs are registered with the Nigerian Cassava Processors and Marketers Association (NICAPMA), an association of all cassava processors and marketers in the country. NICAPMA's 85 SMEs are spread all around the country (Table 4), and produce predominantly HQCF from cassava wet cake and cassava roots obtained from a network of farmers close to them. As of September 9, 2011, only 14 of these SMEs are currently functional and in operation due to a lack of purchase of flour by the wheat flour millers.

Figure 2.7: Total number of SME HQCF Processing Plants in Nigeria and their installed capacity

S/N	Geo-political Zone	Number of SME Factories (NICAPMA Members)	Installed Capacity as at September 2010 (ton/day)
1.	North ñ Central	16	36
2.	South ñ West	51	122
3.	South ñ East	5	12
4.	South ñ South	13	34
	Total	85	204

Source: Received from NICAPMA by C: AVA (2011)

The principal challenge faced by the HQCF value-chain in Nigeria is the lack of enforcement of government policy on the 10% replacement of wheat flour with HQCF in bread. This has led to a collapse of demand for HQCF. Nigeria imports about 4 million ton/year of wheat; with a recovery rate of 75% for the production of wheat flour, an equivalent of 3 million ton of wheat flour/year. A total of 2.2 million ton/year is used for bread making; 500,000t for biscuits/snacks; and 300,000t for noodles. At a 10% replacement rate, this translates to 220,000 tons of HQCF for the bread making industry and another 50,000tons for biscuits, and 30,000 tons for noodles.

Other constraints facing the value-added chain include scattered nature of farm lands and poor road infrastructure that increases the transaction costs for supply of raw materials to HQCF processors, and the high cost of raw materials due to the low average yield per hectare on farmers' field, 8 ñ 11t/ ha. Low productivity is in turn due to poor access and late supply of inputs, and lack of access to credit by farmers. On the processing side, there are quality issues with HQCF from SMEs; when HQCF is used as substitute in wheat flour quality specifications and compliance standards are high and requires an in-house laboratory to ensure each batch going to the flour mills meet the required standards. Another constraint is the lack of suitable mechanical peelers by SMEs that increases the cost of production.

A general problem for all sizes of HQCF millers is the high cost of diesel fuel to run the factories, due to erratic power supply, lack of working capital given that commercial banks shun the agricultural sector, and the low price offered by the flour mill that barely offsets production costs. While the ideal price for HQCF is N80/ Kg, flour millers offer less than this amount which makes it difficult for HQCF producers to break even.

Starch

Cassava starch is an important domestic and industrial raw material used in the manufacture of various products including food, adhesives, thickening agents, paper, and pharmaceuticals. It has many remarkable characteristics including high paste viscosity, high paste clarity and high freeze-thaw stability, which are advantageous to many industries. The Nigerian demand for starch is estimated at 230,000 tonnes per year; with 60,000 tons of starch used by Nestle and Unilever alone (UNIDO 2006). Of the 5 modern

large-scale cassava starch factories existing in Nigeria, only two are in operation, Nigeria Starch Mill (NSM), Ihiala, with an installed capacity of 15,000 ton of starch/year and MATNA Starch mill, Akure, with installed capacity of 5,000 ton/year. In addition to these two large mills, there are hundreds of small village-level processors who produce starch around Warri in Delta State for food and other industrial non-food applications, such as for use in textile mills, plywood, cardboard, and in the paint industry.

The starch value-chain is characterized by difficulty in securing sufficient fresh roots to run the large mill at full capacity; both NSM and MATNA run at 40 and 60% capacity respectively. Currently, the MATNA mill works a single shift and sources cassava from 1,200 hectares of small holder farms located 650km from the mill. The plan going forward is to improve this supply by clustering 2,500-3,000 hectares of farms within 300km of the mill for a two shift operation. In the long term, the mill will operate three shifts using fresh roots from 4500-5000 hectares of cassava of which at least 2/3 is from within 300km. NSM on the other hand has a nucleus farm of 500Ha that meets roughly 20% of its raw material needs. The rest of its raw material comes from white Zimbabwean out grower farmers, some 700 km away in Shonga, Kwara state. Sourcing cassava from such a long distance adds N7,000 to each ton of fresh cassava roots.

A study of USAID MARKETS revealed commercial starch processors of Cassava need consistent volumes to be profitable. Solutions include The Cassava Supply Management System (CSMS), a database for managing supplier relationship, it includes: a system for planning harvest; a record of deliveries for accounting; manages complex supplier network; efficient allocation of transport fleet; Standard Operating Procedures Developed: Harvest, Transport and Delivery. Aside from the challenge of a consistent supply of fresh roots to feed the factory, starch value suffers from similar raw material production constraints of high transaction costs due to poor road infrastructure, high prices of raw materials due to low productivity and uncertain availability of inputs (stems, fertilizer and other chemicals as at when due). On the side of the mills, challenges include, high energy costs, loans and extension services to farmer groups, management of mills operations require more time to organize management of suppliers for optimum production.

Sweeteners

Cassava starch and HQCF can be used as raw material for sweeteners, primarily high fructose syrup (HFS), glucose, and sorbitol. Sweeteners are obtained by hydrolysis of cassava starch or flour or wet cake, to produce glucose, which is further purified to produce HFS or hydrogenated to produce sorbitol. One ton of starch yields 900kg of glucose, 550 tons of HFS (55% purity), and 1.1 ton of sorbitol (70% purity). The annual demand for these sweeteners in Nigeria is: 150,000 tons of HFS, as part replacement for imported sugar in the soft drink and juice industry, 40,000 tons/year of glucose, and 14,000 tons of sorbitol. The sweetener industry is a strong growth market that is expected to grow by 50% over the next ten years. Ekha Agro Nigeria Limited, is currently the only cassava processor, producing sweeteners, liquid glucose, from cassava for supply to Guinness PLC.

But the soft drink industry, specifically The Coca-Cola Company (TCCC) Nigeria, has recognized the viability of HFS from cassava as an alternative to sugar for beverage applications and has been in discussion with Thai Farms International Limited, a company based in Ogun State currently producing food and pharmaceutical grade cassava flour and intends to integrate to HFS production. Furthermore, some groundwork has been done by both Corn Products International and Cargill, who are global sweetener supply partners with TCCC. There is interest by both Cargill to set up HFS factories in Nigeria. These plants will supply TCCC. The implementation timeline will be in the range of 12 ñ 18 months, driven by ingredient approval, supplier approval, investment in storage and material handling infrastructure, ingredient integration and people & process capability development. TCCC Nigeria has offered to develop a road map in conjunction with a large processor interested in the development of sweeteners. Similarly, DATCO has an interest to produce Sorbitol in Nigeria to supply Unilever. DATCO is also in negotiations with two beer companies, SAB Miller and Heineken to establish glucose factories in Nigeria.

Dried Cassava Chips

Cassava chunks, produced by peeling and sun drying of storage roots is a major article of trade in Taraba, Benue, Nasarawa, Plateau and Kaduna states between the dry season months of December and March. In the mid-90s cassava chunks collection and warehousing was a very lucrative business in Nasarawa and Benue states when Nigerian

Yeast and Alcohol Manufacturing Company Plc (NIYAMCO), Bacita was in active production of ethanol. Open Local Purchase Orders were issued to suppliers. At that time, an average of forty 911 Mercedes Benz trucks were loaded at Doma Market on daily basis, each carrying about 10 metric tons. When the company ran down, the market collapsed and threw many cassava merchants and cassava farmers into serious financial crises. In effect many jobs were lost as those who planted cassava, processed and stored the chunks entered into huge debits. The company has not come out of its problem till today.

There was another alcohol company called Albani in Lagos which has also run down. The major problem these companies faced was the importation of alcohol into Nigeria at the expense of local industries. The principal market for chips currently is the Dawanu Market in Kano, a major food stuff market serving the Sahelian West African region; cassava chips and chunks are traded as far as Niger, Chad, Central African, and Southern Sudan republics. An estimated 300,000 MT of chunks are traded every year. Animal feed millers, the other potential users of dried chips, have not adopted widely the use of chips for animal feeds. Grand Cereal and Oil Company based in Jos are the only feed millers that use cassava chunks. The total estimate used for animal feed is 80,000 tons of chunks.

An importer of dried chip from China has expressed interest in importing 520,000 tons of chips every year from Nigeria or 10,000 tons per week. This brings the total potential demand of chips and chunks to 900,000 tons per annum. Therefore to produce 900,000MT, a total of 3.36 million MT of cassava roots are needed. If the average yield/ha of cassava is 25 MT the area to be cultivated will be 134,280 hectares. If one cluster for the production of chips is about 120ha, 1,119 locations will be required. An estimated 268,560 jobs will be created. The only way chips from Nigeria can be competitive is to produce at a price that is cost effective for the producer, processor and exporter and to identify a cheap means of transport of dried chips from the hinterland to the ports and an elimination of all import tariffs at the ports in China.

The principal constraints of the dried cassava chip market is the low productivity of cassava, leading to high prices of dried chips, high transport costs, and lack of strong markets, as demonstrated by the wide swing in prices of dried chips due to oversupply by farmers at harvest and a lack of storage capacity. Over the course of a single year, a 100Kg

bag of chips can be bought from farmers for as little as N2,000 and as much N3,000. At N3,000 per 100kg bag, this translates to N30,000 per ton of which N6,000 goes to transport cost and a little above N5,000 per ton of fresh roots, assuming fresh roots make up 80% of the cost of dried chips and a conversion ratio of fresh roots to chips of 3.73. But at N20,000 per ton of dried chips, the cost of fresh roots falls to under N3,000 per ton which is not profitable for a producer.

Other constraints in the dried chips value-added chains and ways to resolve them include:

- Urgent and aggressive support for elimination of import tariffs for dried chips in China
- Increasing the capacity of third-party independent inspection organization like SGS, Intertek, Bureau Veritas to conduct pre-shipment inspection to obtain Quality certificate, Quantity and weight certificate, which are required by the Chinese customs. At the moment SGS/Intertek.Nigeria is not functional and they do not have advanced equipment in Nigeria and can only conduct moisture content test.
- Creation of a window to interface with the key commodity association ñ NICAPMA; NICAPMA in collaboration with NAFDAC & SON should be used to ascertain quality and ensure compliance by all HQCF producers.
- Access to credit: majority of cassava farmers and processors live in areas that are resource-poor, highly heterogeneous and risk prone. Consequently, conventional financial institutions are not inclined to provide loans to these without collateral. There is a need to improve access of credit to farmers and processors. Credit could also be given out to farmers and processors through partnership with some NGOs that are involved in credit schemes using social collateral for loan disbursement.

Fuel Ethanol (E10)

At the instigation of the Federal Government of Nigeria, the Renewable Energy Division (RED) of the National Nigerian Petroleum Corporation (NNPC) began working in 2005 on a plan to develop a program to make ethanol in Nigeria from sugarcane and cassava, and biodiesel from palm oil. The goal of the program was the adoption of E10+ standards across Nigeria, a potential demand for fuel ethanol greater than 1 billion liters per annum, as well as significant market penetration by biodiesel. Given the potential of the E-10

program to create a huge market for cassava, detailed feasibility studies were completed for integrated cassava and ethanol plant projects, the results confirmed the assumptions of the benefits of the E-10 program were indeed correct. Although none of these studies have been implemented due to policy inconsistencies, the potential impact on the cassava industry is huge (Figure 2.5)

Fuel ethanol can be produced by large >25 million liters per year plants or small 10,000 liters a year plants. Large scale ethanol plants are more energy efficient and require a large network of farmers to supply raw materials on a daily basis, some 1,000 ñ 2,000 tons of fresh cassava roots per day. Supply chains for fuel ethanol will require a new generation of cassava farmers who produce cassava as a full-time business. These farmers will be in the age bracket of 20 ñ 35 years, have a minimum of an OND or HND and will be linked up to technology, finance, and tractor hiring units. Average farm size will be a minimum of 10 hectares in a highly productive manner, yields of at least 25 MT/hectare with 25% Starch content. Constraints in the fuel ethanol value-added chain is the inconsistency of the E-10 government policy and the infrastructure required to truck fuel ethanol to fuel depots where they can be mixed and transported to fuel stations. Other constraints include the large CAPEX for setting up a fuel ethanol processing plant.

High Quality Garri

With a share of 70% of all cassava fresh roots harvested, garri will continue to dominate the cassava sector in the short term. The growth rate of garri has been put at least 4-6% per annum, primarily due to population growth and increasing urbanization, and export to the regional West African market. It already provides livelihoods to more than 5 million farmers and processors (often poor rural women) in Nigeria, as well as to numerous equipment manufacturers, wholesale and retail traders, and transporters. In addition, small-scale garri processing has gradually become the main source of non-farm rural employment in many countries.

Garri processing operations in Nigeria can be described at 5 levels of capacity. The common terms used to describe these capacity levels are household (or cottage), micro, small, medium and large. Household level processing typically does not employ any outside labor. The household consumes virtually all of the processed products and sells a

small amount to raise income for additional household needs. At present, close to 50% of Nigerian processors fall within this category.

At the micro processing capacity the employment of one or two units of labor may take place while processing garri products. This enterprise typically uses batch processing. Batch processing may take four hours per day and this would be sufficient for the owner/operator. Roughly 40% of processors in Nigeria fall into this category of operation. The small and medium processing operations typically employ three to ten workers and represents 10% of all garri processing. Large scale garri processing is virtually non-existent in Nigeria. Large-scale operations are defined as enterprises employing 10-30 or more labourers. Large-scale operations would also have the capacity for large tonnage processing with wider marketing opportunities.

Garri chains are almost completely informal, poorly organized, with little or none quality standards both at the processing and marketing stages. Processing equipment (graters, presses, mills, fryers) are often of poor quality. The end result is a poor quality product that is not accepted in supermarket chains in export markets of North America and Europe. Constraints of the sector include access to credit by farmers and processors to obtain inputs and processing equipment respectively. The chains have high unit costs; generally a low labour productivity and a low innovation rate (artisanal mechanization) and deliver products of an irregular quality.

Transformation Strategy

In designing a transformation strategy for cassava in Nigeria, previous efforts to develop cassava in the country provide some guiding principles. These insights can be summarized as follows:

1. Nigerian cassava-based industrial products are just a fraction of imports, so growth potential is huge ñ if factories are profitable.
2. Existing factories must become and remain profitable as a means of lowering barriers of entry to others.

3. Incentives must be created for farmers, processors, users, financiers, and other actors along the value chain in exchange for long term beneficial relationships
4. Reliable supply of raw materials at competitive prices must be pursued via encouragements for farmers to form clusters of 10-50 ha, widespread dissemination of improved production methods, and the inputs required to implement those packages.
5. Supportive and consistent trade policies, as well as access to credit must be put in place.
6. Clear communication of development intentions to private and public stakeholders, both State, Local government, and civil society, and definition of their roles.
7. Market institutions to support cassava farmers and processors.

Implementation of the transformation strategy will be by a team of subject matter specialists in the following areas namely: production, processing, policy, capacity building, engagement of partners, and crop breeding. The team will have a leader responsible for overall programmatic direction of the strategy. All members of the team are members of the Agricultural Transformation Implementation Council (ATIC).

Current Production Level and Yearly Target under the Transformation Agenda.

Yearly Production Target Levels

In calculating yearly production target levels for the cassava transformation, we need to define a baseline demand for cassava as food. There is a national requirement of 25M tons of fresh cassava roots for garri, 6 M tons for other traditional food products, 1.5M for production of dried chips, and an estimated 3.5M tons lost to wastage before or during peeling and processing, to give a total base amount of 36M tons. FAO production figures in 2009, 36.8 M tons, is close to this base line as prices for cassava roots was high in 2009, suggesting supply was close or lower than demand. We therefore assume 36M is the base-line demand for the traditional food market of cassava in Nigeria. To this demand for food,

we add an estimated 4% annual increase due to population growth and potential for export of more garri and dried chips to the Sahelian West African region.

Production figure for 2011 is estimated at 40M tons of cassava based upon projections of 3.982M ha of land planted to cassava in the 2010 wet season (NAERLS Agricultural Performance Survey 2010). Cassava is currently suffering a depression in price, N3000-N5,000 from N8,000-N12,000 in 2009 due to oversupply at the moment. However, this figure will be verified by a survey of cassava production in Nigeria to be carried out at the onset of the project.

We envisage that, based upon reinstatement of demand for HCQF by flour millers, additional demand for dried chips, strengthening the cassava starch value-added chain, the debut of cassava as feedstock in the fuel ethanol industry, and new markets created by high quality garri for local consumption and export, the demand for fresh roots will rise. Table 4 shows the expected demand for fresh and roots based upon the base and new demands.

Figure 2.8: Current production level and yearly target increase under the transformation agenda

Source of demand	Fresh root demand (in Millions of metric tons)				
	2011	2012	2013	2014	2015
Base-line for food (4% per annum increase)	36.00	37.44	38.94	40.50	42.11
HCQF	0.35	1.15	1.17	1.20	1.22
Sweetners	0.01	0.02	0.95	0.98	1.22
Dried chips	1.87	2.24	2.61	2.88	3.17
Fuel Ethanol	0	0	0.8	1.2	1.5
High Quality Garri	0.5	0.75	1	1.5	2
Surplus (purchase by govt)	1.7	0.8	0.3	0.2	0.2
TOTAL	40.43	42.40	45.77	48.55	51.21

Source of demand Fresh root demand (in Millions of metric tons)

Low hanging fruits' interventions to stabilize the cassava sub-sector.

Tackling the cassava glut

Based on reports received from large cassava growers, represented by white Zimbabwean farmers, and small holders, and a survey of the current price of cassava per ton, N3,000 to N5,000, there is a glut of cassava in Nigeria. Except government intervenes to create demand for the harvest of this year, there is going to be a significant reduction of cassava

in the area of cassava planted in 2012 and an concomitant increase in prices of fresh roots and of garri,- the food of low income rural and urban populations in 2013. If the cassava transformation is going to succeed to raise productivity and secure demand in industrial and export markets, we must immediately act to stabilize the cassava sub-sector. Three immediate flow hanging fruit interventions are apparent:

An Agreement by Government with Flour Millers to Resume the Purchase of HQCF.

The resumption of purchase by the three largest flour millers of HQCF this year is a demand of over 90,000 tons of HQCF and a fresh root demand of over 360,000 tons. We propose an immediate meeting with the chairmen of flour millers to obtain their agreement to comply with the government policy on 10% replacement of wheat flour in bread with HQCF. Control of quality of HQCF will be in independent hands, executed by an internationally recognized independent quality and quantity inspection company whose findings are binding on both buyer and seller. Support for this service will be requested from donors like the Dutch Government or the USAID to assist the Federal Government in establishing a relationship with an independent inspection company. Quality of goods will always be determined at the point of departure from the cassava processor and on arrival at the wheat millers premises.

Support for the export of dried chips to China.

A Chinese importer of dried chips has made a request for 520,000 tons of dried cassava chips. However, costs of raw material, processing, transport, warehousing, transport and import tariffs make dried chips from Nigeria uneconomic for export to China. Federal Ministry of Agriculture and Natural Resources (FMANR) will commission a feasibility study on the export of dried chips to China that takes a close look at the value-added chain and investigate possible growth enhancement support to exporters, including frontloading tax incentives for exports of dried chips and the use of existing government owned storage facilities by exporters. The Federal Ministry of Agriculture and Natural Resources (FMANR) will work with Nigeria's embassy in China and the Chinese government to eliminate import tariffs on imported cassava chips. This intervention, if done as soon as possible, is capable of removing over a million tons of the harvest this year.

Minimum price guarantee to farmers.

A minimum price guarantee mechanism, that offers a fair price for farmer's harvest, will

have to be implemented this harvest season on a scale capable of absorbing 1.6 million tons of cassava in the form of garri and dried chips, destined for the food reserve. Assuming a 50:50 proportions of garri and chips, this is the equivalent of 135,000 tons of garri and 214,000 tons of dried chips. A feasibility study on the cost and logistics of doing this will also be commissioned by the FMANR.

Production Strategy

Staple Crop Processing Zones (SCPZ)

A key component strategy of the Agricultural Transformation Agenda of President Jonathan and the Honorable Minister, Dr Akin Adesina, is attracting private sector agribusinesses to set up processing plants in zones with high food production, or staple crop processing zones (SCPZ), to process commodities into food products, . The government will encourage investment in SCPZ by putting in place appropriate fiscal, investment and infrastructure policies, including tax breaks on import of agricultural processing equipment, tax holidays for processors who re-locate to the SCPZ; supportive infrastructure, especially complimentary investment in roads, logistics, storage facilities and power. SCPZ will link farmers in clusters to food manufacturing plants.

Similarly, the production strategy of the cassava transformation makes SCPZ the priority location of its interventions. For cassava we define SCPZ in two ways: regions of existing processing facilities and regions of high cassava production. On the first definition of SCPZ ñ regions of existing processing plants - we will create incentives for commercial farming and out grower schemes for existing processing plants by offering smallholders credit, inputs, guaranteed markets, support for land clearing and mechanization, on- and off-farm training in exchange for clustering together into farms of 5-50 hectares or larger. While contiguous nature of the farms helps with mechanization, they don't necessarily have to be at one single location. Each cluster of farmers will be tied to known and verified demand for a cassava product. Besides the clusters will be locations of where minimum guaranteed price or buy back by government will emphasize.

Setting up Commercial Cassava Farms

Research and experience in Africa reveals that yield increase is easier on larger farms, at least ten hectares. Besides the existence of larger scale commercial farms can provide jobs and technical know-how to area farms. Furthermore, commercial farms help large scale cassava processors lower production cost and obtain enough low-cost raw material from farmers to feed their factory. The clusters will be identified by a survey, at first a desk study to review recent cassava production and processing statistics, and existing farmer groups, followed by a visit to a short-list of sites to pick out eventual sites. A survey instrument will be developed for this purpose in collaboration with the NAERLS crop survey, and complimented with surveys by the team and new methods of satellite imagery of the entire country. Enumerators from the NAERLS, National Office of Statistics, ADPs, and NGOs active in the area will collect key information from farmers that include: telephone numbers, acreage, yields, root production per year, demand, markets, use of inputs, access to loans, income, and household information. A data-base of this information will be developed for the country to help plan dissemination and value-chain development activities for the current initiative.

Creation of mega clusters will be driven by State Governments, as represented by ADPs, and cassava farmer associations with technical backstopping from Cassava + and USAID Markets. Once the clusters have been developed, farmers groups will initially be trained in cassava production practices, for example adequate fertilization, effective erosion control, crop rotation, best time of planting, plant density, selection of healthy planting material, timely weeding, integrated pest management, etc etc by a visit to a commercial scale demonstration trial to be located in each SPCZ. Following, a few improved production packages of: 3-4 best bet improved variety, fertilizer rates - based upon soil testing - weed control, crop rotation, and cultural practices, will be selected in a participatory fashion with farmers for their specific location. The cluster of farmers will also be supported to access inputs and tractors, via the growth enhancement support program of FMNAR, and credit for purchase of inputs. During the season, an extension agent will be sent to inspect the crop and provide advice as needed. Based upon projection of acreage, we envisage 4,000

clusters of farmers will be set up every year, and at one extension agent for 50 farmer groups, we envisage 80 extension agents across SPCZs.

Increased Cassava Processing

Building Supply chains

The cassava transformation team will designate as SCPZ areas where there are existing large processors and SMEs in HQCF, starch, sweetener, dried chips, and high quality garri. This will help buy-down risk, through the support of processors with basic amenities like reliable power and water, reduction of excessive taxation, elimination of police toll gates, etc etc . In the first instance, the cassava team will assist in building a network of growers around processors and helping to facilitate fair pricing mechanisms, both spot and future prices, via pricing surveys to help the processor and farmers quickly arrive at a fair price. The team will work with processors and third-parties to communicate pricing and pickup dates via SMS.

Quality control

A key activity of processing under the cassava transformation is quality audit of existing SMEs working on HQCF, starch, and dried chips, and the development of a Tracking System for HQCF purchased by end users. Furthermore, it is very important that associations of SMEs self-regulate the quality of HQCF produced by their members. This will require setting up laboratory facilities that can be funded by DFIs, for example the Dutch Foreign Development Agency (DGIS). In addition, the cassava team will aggressively pursue experienced international and local investors via Joint Ventures and partnerships to pursue opportunities in the starch, sweetener, and HCQF value-added chains in SCPZ with high levels of commercial production. Investment and technical know-how is required to create an industrial demand for cassava. Discussions are different stages with Cargill, SabMiller, and Unilever on setting up Sweetener plants in Nigeria.

Product promotion (Existing and new products)

There are new products that can be developed from cassava that can further extend import substitution and create additional demand; this includes cassava bread, noodles and spaghetti from composite flour, cassava-based dispersants (oil drilling fluids), and animal

feed formulations based on cassava as supplier of carbohydrates. Cassava bread is made with 100% cassava starch and it is commonly consumed in Brazil and Colombia as a national food. It is made by fermenting cassava starch (non-fermented versions can also be made), sun-drying it, and then adding other baking ingredients and baking it in the oven. Sun drying the flower causes a photochemical reaction that polymerizes starch into a network of polymers which traps gas and makes the bread to rise like wheat bread; a project to develop cassava bread will be negotiated with CIRAD via the French embassy in Nigeria.

Input requirement (Seed, Fertilizer, Agro-chemicals, etc)

Commercial Seed Systems

The value chain for cassava planting materials is complex and not well-developed; farmers are not interested in multiplying cassava stems as a stand-alone business. However, as value-added chains become better organized, there will be a need for farmers to harvest and sell cassava during the dry seasons and will require stems at the start of the rains. The price of cassava is higher during the dry season. But, donor financed projects have often given away stems for free, destroying whatever business opportunities exist for sale of stems to farmers. There is a need to develop incentives for multiplication and distribution of stems commercially. The approach in the cassava transformation is to build capacity of progressive farmers to multiply stems and develop a reputable supply chain to farmers via agro-dealers that will address timely access and quality of planting materials. Quality control systems and feedback loops will be put in place to ensure stem quality goes up in clusters in a timely fashion. To further strengthen the seed value-added chain, DFIs and State governors will be encouraged to use a voucher system to disseminate stems rather than hand them out for free. The vouchers are given to the agro-dealer or stem producer who redeem them for cash.

Setting up this kind of seed system is very important for the cassava subsector. It builds up a crop of seed entrepreneurs. Each stem producer will manage between 5-50 ha and will be certified for quality and seed health based upon their complying with phytosanitary protocols for cassava fields. This activity will require working with NPQS, NASC, IITA, NRCRI to develop these protocols and help these seed farms to learn and implement.

These farms subsequently become source of stem procurement by farmers and will help mitigate disease pressure. The activity will involve diagnostic surveys to document disease levels especially the key ones like CMD, CBB, CAD, CM, CGM and the possibility of new threats entering like CBSD. We will institute the stem value-added chain, at least two major certified suppliers of seeds in each SCPZ, immediately the projects begins and ensure it is large enough to produce sufficient stems for clusters of farmers that it serves.

Breeder and Foundation seeds

A critical interface between breeding programs and the seed distribution system occurs at the provision of promising selections to farmers for on-farm adaptation trials and subsequent distribution of breeder seed (BS) or foundation seed (FS) of released cultivars for distribution to farmers. Some logistic and operational policy issues are required to support this system for rapid success and impact. The research institutes (IITA and NRCRI) will work with RTEP ADPs, NGOs, CBOs, to select farmer organizations, medium scale, or large scale farms receive BS or FS seeds for further multiplication. The selected partners will be represented in each SCPZ to allow for quick production and distribution of foundation seeds. Given the need for success and for wider diffusion of the good varieties, a scheme to allow for full cost-recovery by commercial distributor of seeds will be pursued while ensuring the seed supplier also makes a profit. The research institute jointly with RTEP will monitor performance of new cultivars and provide feedback information to breeders required to develop more, better suited cultivars

Access to fertilizer and herbicide

The Agricultural Transformation Agenda, calls for a stimulation of a thriving private sector fertilizer and agro input procurement and distribution industry, with minimal involvement of government, and ensuring that farmers secure the credit to purchase inputs - the Growth Enhancement Support (GES). The cassava transformation will align itself very closely to this program and participate in the private sector-led voucher program of GES to ensure fertilizer and inputs reaches farmers in the clusters widely and in a timely fashion. A functional Agro-dealer network is key to this. For clusters of commercial farmers, an effective network of agro-dealers cannot be overemphasized. Working with the agro-dealers association of Nigeria, a survey of agro-dealers in the intervention areas will be

conducted. The survey will enable the cassava transformation team to determine the strength of the agro-dealer, provide necessary training and link them to credit, and to establish linkages between input suppliers, agro-dealers and clusters of smallholder farmers.

Cassava Variety trials

Adaptive Variety trials

The Presidential Cassava Initiative in 2003 evaluated 40 new genotypes with three check varieties [TMS 30572, TMS 4(2)1425, and TMS 82/00058] in multi-location field trials. The 40 genotypes were the results of a decade of genetic enhancement work at IITA in Ibadan, Nigeria. The check varieties were among the 17 improved genotypes earlier released. A fast-track farmer participatory selection approach was devised to meet the need for new varieties under that initiative and also to abide by the variety release laws of Nigeria. The approach entailed invitation of all the executing agencies involved in variety release (Ministry of Agriculture and Rural Development, ADPs, NSS, NRCRI, farmers) to participate from the onset in a combined series of field trials.

The mandatory on-farm trials (OFTs), demonstrational trials (DEMOs), and multi locational trials (MLTs), instead of being carried out in relay, were executed concurrently for 2 years. In OFTs, DEMOs and MLTs, 40 new clones were used along with three known checks (TMS 30572, TMS 4(2)1425, TMS 82/00058). These new clones, with the potential to replace the current nationally released lines, were 91/02324, 92/0057, 92/0067, 92/0325, 92/0326, 92B/00061, 92B/00068, 94/0026, 94/0039, 94/0561, 95/0166, 95/0289, 95/0379, 96/0523, 96/0603, 96/1089A, 6/1565, 96/1569, 96/1632, 96/1642, 97/0162, 97/0211, 97/2205, 97/3200, 97/4763, 97/4769, 97/4779, 98/0002, 98/0505, 98/0510, 98/0581, 98/2101, 98/2226, 99/2123, 99/3073, 99/6012, M98/0028, M98/0040, M98/0068, and TME 419.

Criteria for the choice of these 40 genotypes were as follows:

- CMD resistance/tolerance (score of <1.04 on severity scale 1–5).
- Multiple pest resistance/tolerance (score of <1.04 on severity scale 1–5; root rot, <5% incidence).
- High and stable yields (<11 t/ha baseline from farmers' fields, choice genotypes must have yields >20 t/ha)
- High dry matter content (>24% baseline, aim >30%).
- General feedback on acceptability from Uniform Yield Trials conducted by IITA.

For the OFTs and DEMOs, the decision on where to locate the trial sites was taken by each State team of ADP workers. The OFTs and DEMOs were spread throughout the three senatorial districts in each State to get a State-wide spread. This was to enable State-level generalizations to be made based on the data retrieved from the trials. A total of 33 genotypes were formally released from those trials but there are a lot more genotypes not released because of adaptation to specific environment and lack of insufficient resources multiply varieties for onward release to ADPs and farmers.

However, these varieties were not tested under best management practices of fertilizer, based on soil testing, herbicides, and planting dates. The cassava transformation initiative will:

1. Work with RTEP and the ADPs to conduct farmer participatory trials of 3-4 varieties and a suite of improved production practices for each cluster location in the SCPZ based on existing field trial information and produce foundation seed of the recommended cassava varieties using existing capacity.
2. Identify best bet genotypes for different agro-ecologies under improved production practices.
3. Identify the defect in these varieties with respect to the needs of the specific locations and particular value-added chain and provide feedback to the breeder.

Variety improvement

Improved crop varieties remain the engine of agriculture. Successful value-added chains of cassava in Thailand and Brazil take advantage of the increased productivity, and profits for actors along the chain, that improved varieties of cassava brings. Under the cassava transformation emphasis will be placed on the development of new varieties that respond well to inputs, the use of biotechnology approaches to accelerate breeding, expanding the genetic base with novel traits, and capacity building of a new generation of cassava breeders.

Identification of cassava varieties that respond to increased use of inputs especially fertilizer:

Cassava breeding in Nigeria test materials across agro-ecologies under zero input conditions typical of how farmers have always grown cassava. But the emphasis is now to grow cassava under best production practices; there is a need to improve cassava for these conditions. In the first instance, 60 advanced breeding lines in the IITA and NRCRI breeding programs will be tested across the cassava belt of Nigeria under optimum production conditions. This activity is expected to result in the identification of genetically improved cultivars that respond to fertilizer best suited in each agro-ecological zone. In addition, an emphasis will be placed traits important to the value-added chains, especially high starch yields.

To ensure quick adoption by farmers and processors, lines already at an advanced stage in the breeding pipeline will be evaluated for performance and quality traits in collaboration with farmers and processors involved in the five value-added chains to determine those that best meet commercial quality requirements. It is important that farmers include seed producers in the respective SCPZ clusters. They can contribute to quick dissemination of new selected materials.

Promote the Integration of Biotechnology Interventions for the Improvement of Cassava VAC.

In the last two decades, advances in biotechnology, especially in molecular markers and double haploid technology, increase the speed of making genetic gain for commercial traits

critical to the development of value added chain products for cassava. Double haploids (DH) reduce to 1-2 generations the time required to generate inbred lines for cassava for production of hybrids. The use of inbred lines to exploit heterosis is a very well known phenomenon in crop breeding and impact of success is huge. In addition to DHs, well defined heterotic groups and evaluation of in- bred for combining ability are other requirements. In addition, DH helps to identify valuable recessive traits, including the waxy starch trait, and novel plant architecture and facilitate their transfer into cassava genepools. While a gestation period of two years is required to develop the DH technology for Nigerian cassava varieties, and another 2-3 years for testing the inbreds for combining ability and performance, the impact DH and resulting from hybrids will be high.

To Genetically Enrich Source Populations for Strategic Target Traits Critical to the Cassava VAC

Progress in cassava breeding relies upon genetic variation. In the past few years, there has been a concerted effort to build and expand the genetic base of cassava through the collection and introduction of landraces and improved exotic materials for different attributes, especially those with novel traits needed to enhance the commercial value of cassava. Through the Generation Challenge Programme (GCP), NRCRI has introduced over 500 genotypes for different traits including improved nutritional quality (protein, beta carotene) delayed Post harvest Physiological Deterioration (PPD), dry matter content, disease and pest resistance, drought tolerance and early bulking.

Similarly IITA have a broad collection of germplasm assembled in the last 35-40 years including wild relatives and unadapted germplasm. Segregating populations created through pre-breeding are available. In addition, mutated populations in collaboration with IAEA, have also been developed and are being screened. These materials and germplasm provide a new base for improving source populations for several economic traits to strengthen the value chain. The source population will be improved through recurrent selection to generate elite gene pools which are expected to result in combination of several favorable alleles of valuable traits for better adaptation, durable and sustainable productivity. About 100 genotypes with good characteristics will be used in this exercise and for genetic improvement.

To Improve Plant Breeding Capacity (PBC) to meet Market Response and Demand Elasticity of Cassava VAC (Capacity Building for Second Generation of Cassava Breeders)

The success of green revolution and development of value added chains is dependent on having well trained breeders. The ideal breeding team should be led by a senior breeder, having an advanced degree in plant and many years of experience, supported by junior breeders that he mentors. This model ensures continuity of breeding programmes for sustainability and continued production of improved materials. Program continuity is very important since development of new cultivars is a long-term endeavor and the program should avoid disruption if it is to be successful. We propose the building of human capacity through training of 3-4 young breeders at the Ph.D. level and 10-15 at the M.Sc level. We also seek an improvement of infrastructure for breeding at National Institute. A detailed description of this request is in the action plan document for variety improvement.

Engagement with Private Sector: Market and Marketing Institutions

Implementation of the value-added chain activities will be driven by the private sector with support from the public sector. A Cassava Market and Trade Development Corporation (CMTDC) will be established as the primary vehicle for implementation of value-added chain activities. Primary activities of CMTDC are market development, including advocacy with potential users of cassava-based products and policy makers, to ensure reliable demand. The corporation will also be charged with establishment of quality standards for the various cassava products.

Learning from Big Players-Thailand, Brazil, is vital if we are to get the formation of CMTDC right. If there is a single word to describe the reason behind the yield increase and strong demand for cassava in the Thai cassava industry it is the Thai Tapioca Development Institute and the Thai Tapioca Trade Associations (TTTA). These two institutions build market and extensions services around farmers. TTDI was established in 1992 as an independent non-profit organization with an initial endowment Fund of 600 million Baht (US\$16 million) from the Ministry of Commerce and the Royal Thai Government. The Thai Tapioca Development Foundation was formed with a mission to:

1. To promote cost-saving production efficiency through replacing traditional varieties with new, improved varieties, and improving production methods and technologies.
2. To promote greater uses of tapioca through research.
3. To develop markets for tapioca products within the country and abroad.
4. To create public awareness on tapioca through providing information and knowledge on tapioca products.
5. To develop human resources needed in the tapioca industry.

The objectives of TTDI are:

1. To promote research and development on tapioca varietal improvements, production technologies, mechanized harvesting and other tapioca products.
2. To undertake studies on production restructuring and provide policy recommendations relating to the government, the private sector and the farmers.
3. To undertake studies on import duties and other trade barriers imposed on tapioca exports.

TTDI established a 300 hectares Tapioca Development Institute at Huay Bong, Korat in 1993 to expand the production of new high yield varieties for distribution to farmers, and to conduct research and experiment activities in various aspects of production efficiency as well as to train farmers in new cultivation techniques. From 1993 to 2000, more than 30,000 farmers had been trained and 60 million stems of new varieties were distributed free of charge to farmers.

The commercial agriculture program of the World Bank is funding an expert group study of experienced agricultural entrepreneurs, one from the starch and dried chips industries from China and Thailand, and one Thai government official expert, on implementation of the minimum guaranteed price for dried cassava chips. The goal of the expert study group

is to advise the government on setting up the Cassava Market and Trade Development Corporation (CMTDC) and development of strong supply chains in the starch and flour value-added chains in Nigeria, and setting up a minimum guaranteed price mechanism. The expert group will visit existing starch and flour factories, production and dried chips processing/marketing locations in Nigeria over a period of two weeks. An additional week will be spent writing a report and making recommendations on technical, policy, and capacity building interventions to improve supply chain management.

Engagement with public sector: State and Local Government, and civil society

State and Local governments are critical to the successful implementation of the cassava action as they own and fund the extension service and are closest to farmers. The cassava transformation will jointly develop investment framework with States by incentivizing states to co- invest with the federal government in the development of the cassava value-added chain. Partnership will be operated under four key principles:

1. Subsidiarity: Working from the State level up
2. Partnership: Working with states, private sector and civil society.
3. Investment: Utilize investment methodology and framework.
4. Accountability: There will be full transparency and accountability within the system.

Method of engagement will be twofold: first the Honorable Minister of State will present a well articulated roadmap of the agenda to the Agricultural Council and at the governors' forum to gain their consent. Once the governors' buy-in, the local governments will follow with ease. The second approach is State by State sensitization, on a geo-political regional basis, to demonstrate the seriousness of the Federal Government and to firm up states' commitment to the programme. The interested governors will be invited to express their commitment to the Hon. Minister of Agriculture and Rural Development in the form of commitment to invest in rural infrastructure and extension services.

Another group of stake-holders that will need to be engaged are NGOs, CBOs, and other civil society groups who have capability to take model interventions to scale. Specific area of intervention expected from each stakeholder will be spelt out; for example the

development of rural roads, which is paramount for the success of the agenda will be the responsibility of the state governments. The responsibility of providing water and energy should be assigned to relevant agencies. Expected derivable and benefits for each stakeholder will also be clearly stated.

Research and Extension requirement

Extension or farmer education is required to facilitate the dissemination of improved production and small scale processing technologies to thousands of farmer group. Facilitation requires investments in skills training and productive infrastructure. The cassava transformation team will put in place a mechanism to train, support, and supervise State ADP extension agents who will be the primary vehicle for getting information out to farmers. Two extension agents, one in production and one in processing, will be attached to each cluster of farmers and processors.

Training sessions, by geo-political zones will be held for the extension agents by subject matter specialist on the cassava transformation team or consultants engaged for that purpose. To ensure quality control, subject matter specialist will pay a visit to the extension agents in the field at least once during the course of the year. To ensure commitments, the project will provide incentives to the two extension agents attached to the farm and processor clusters.

Policies and Advocacy requirement (land, input, product, insurance and fiscal)

Taking examples from countries that have successfully developed their cassava sector, Thailand and Brazil, enabling legislative acts, fiscal, financial and agricultural policy interventions targeted at creation of market demand are needed to build the cassava sector. Other incentives include recognizing outstanding performance by farmers and the creation of awards. A list of the needed policies are described below

Enabling Legislative Acts for Market Development

- i) 10% Cassava Flour substitution for bread wheat flour
- ii) Blending 10% ethanol with petrol.

Fiscal Policies

- i) Zero tariffs (custom, excise and value added) for import of agricultural equipment and agro-processing equipment
- ii) Create incentives for investment, both foreign and domestic, in large scale processing facilities, including but not limited to tax holidays for investors putting processing plants in staple crop processing zones
- iii) Increase levy on any commodities that Nigeria can produce (starch, sugar and wheat)
- iv) Tax reduction for the flour millers that adhere to the 10% cassava flour inclusion policy.
- v) Current policy on import levy of 5% for brown rice and 30% for polished milled rice, and 5% on raw sugar and 10% on starches should be increased and revenue used to support domestic production
- vi) Tax reduction for the companies using cassava starch as composite/substitute for the imported flour; e.g. cassava instead of corn starch, users of cassava glucose syrup as substitute of another product, e.t.c. (Nestle, Cadbury, Indomie Noodles, pharmaceuticals etc ..)
- vii) Supportive incentives for investors establishing blending plants for ethanol
- viii) Guaranteed minimum pricing for Cassava producers.
- ix) Elimination of the import tariff in China for exporters of cassava chips.

Financial Service Policies

- i) Incentives for access of farmers to weather index insurance to adapt to climate change
 - ii) Removal of the current monopoly on agricultural insurance by the National Agricultural Insurance Company and liberalize to allow private sector insurance companies
- Industrial Policies

Agricultural Policies

- i) Create institutions to support the agricultural transformation agenda
- ii) Marketing Corporations, to replace marketing boards
- iii) Transform the Agricultural Research Council (ARCN) to a National Agricultural Transformation Agency like EMPRAPA that transformed Brazilian agriculture
- iv) Guaranteed minimum price for food crops
- v) Revise the Land Use Act to enable easier access to land for investors in Agriculture
- vi) Rapid expansion in irrigation facilities and revamping of existing ones
- vii) Incentives to engage young commercial farmers for farming as a business

Cross cutting Incentives for motivation

- i) Recognition, Awards and Prices for high performing farmers, Processors, Input dealers and Marketers, in the all agricultural enterprises, especially the target commodities.
- ii) Recognition and Award for best performing State Governors in Agriculture.

New Investment required to support the entire value chain

Total amount of investment to support the cassava transformation plan is N4.751B. The funds will be expended as follows:

1. Study of expert group from Thailand and China to set up the Cassava Market and Trade Development Corporation (CMTDC) ñ N12.87M (funding already obtained from the Commercial Agriculture Program of the World Bank)
2. Survey of the cassava production and processing sector towards formation of clusters ñ N7.5M Source of funding is the Crop department of FMANR
3. Quality control and audit of the small scale flour processing industry ñ N3M

4. Establishment of the clusters and Supply chain management activities ñN120M. Source of funding is the Crop department of FMANR and ATIC
5. Feasibility studies on a minimum price guarantee and dried chip export to China ñ N7.5M. Source of funding is the ATIC of FMANR
6. Testing and dissemination of new cassava varieties that respond to inputs ñ N160M. Source of funding is the Crop department of FMANR
7. Dissemination of new small dried chip scale processing technologyñ N3.3B. Source of funding is the Processing department of FMANR
8. Development of new products N8.5M. Source of funding includes CIRAD, FIIRO, and FMANR
9. Breeding new varieties ñ N160M (Varied source of current and new funding ñ GCP, AGRA, Danforth Center, Gates Foundation, etc)

Detailed budgets are under preparation and will be made available soon.

Job creation strategy and figures

Based upon a potential demand of 250,000 ton/year in the High Quality Cassava Flour (HQCF), for 10% replacement in bread flour, and for use in bouillon, noodles, and the adhesive industry (dextrins); a demand for native and modified starches that exceeds 230,000 tons/year in the food, paint, and pharmaceutical industries, another million tons of fresh roots; an annual demand of 150,000 tons exists for high fructose syrup, as part replacement for imported sugar, and 40,000 tons/year for glucose (40,000ton/year); a potential demand of 900,000 tons per annum for dried chips, with 300,000 tons going to the regional food market, an estimated 80,000 tons/year to the local a potential 400million liter per year market of and 455,000 tons/ per year, for high quality garri, a total additional production of 12.7 million tons of fresh roots from 510,337 ha of land is needed. Assuming one direct job per hectare on-farm and one direct job off-farm, this is a total of creating over 1.04 million jobs.

In addition, income attributable to farmers based upon this demand is estimated at 12.5ton per farm family, assuming one farm family cultivates an average of 0.5ha in the farm clusters. At price of US\$40 per ton, this is an increased income of US\$450 per family or a total addition of 62billion of added income to the economy.

Major assumption and risk elements.

Risk elements associated with the program can be divided into three: technical, financial, and political. Successful implementation of the programs makes assumptions that these risks will be adequately taken care of; below are a list of these assumptions; they are also described in greater detail by value-added chain in the program log frame.

Technical

1. Coordinated production and supply capacity to processing plants resolved by formation of clusters of farmers and producers
2. Access to inputs by farmers through implementation of the Growth Enhanced Support (GES) Program
3. Fair pricing of fresh roots
4. Availability of efficient and affordable peelers and dryers

Financial

1. Adequate Funding to the cassava transformation program
2. Sincerity of financial institutions under NIRSAL to provide credit to both processors and end-users

Political

1. Consistency in policy & appropriate legislation.
2. Improved power, road and market infrastructure
3. Cooperation by all stakeholders
4. Availability and consistent pricing of diesel

Monitoring and evaluation

Monitoring and evaluation (M&E) plans will be drawn up and implemented for all activities of the project and tools for the project. An M&E plan will be completed during the first two months of project activity. The monitoring system will build on existing tools used in similar large-scale projects, including on-farm monitoring tools, site surveys, and assessment of quantitative indicators. A simple but adequate reporting format will be developed by which the intervention efforts will be monitored on a quarterly basis. The report will help to determine the impact of current strategies on poverty alleviation or a need for modification.

Implementing partners will be trained in monitoring tools and reporting requirements and will be responsible for data collection and reporting on achievements against targets. A database will be developed to compile information received from partners at the state ADP levels. Information will be analyzed at all project levels ñ partner, territory, country and project. To achieve near real-time reporting, a web-based system will be used, with partners uploading data directly. However the program will encourage leading research institutes to participate in its monitoring and evaluation process as well as employ social scientists who will monitor and evaluate its work.

Expected Impact

1. Strong value added chains of starch, HQCF, sweeteners, dried chips, high quality garri, and fuel ethanol in Nigeria.
2. A doubling of average cassava productivity from 12 to 25 ton/ha in target clusters by 2014.
3. Generation of one million jobs in the rural areas of Nigeria over the next four years of the program.
4. An increase in income of 1.8 million participating farm families by US\$450 every year.
5. Strong market institutions establish for long term sustainability of the cassava sub-sector.

Data Management

Large amounts of data will be collected in the process of implementing the cassava transformation program. They include: information on production, processing, and markets from the cassava; market information; inventory of agro dealers; data from the adaptive variety trials and the various breeding initiative etc etc. A data base capable of handling these diverse sources of information and that is searchable will be set up. It will be web-based so that the information is accessible from different parts of the country. The data base will be built in cooperation with USDA's National Agricultural Statistics program, NASS, and PCU.

2.3 Theoretical Framework

2.3.1 Theoretical Models in Communication for Development

Whether explicitly acknowledged or not, the majority of empirical research work in development communication is theory based. Theoretical underpinnings define and limit the types of communication channels to employ the scales of communication initiatives, the intended goals, and a number of other aspects of communication interventions in development settings. However, models and theories of development communication have undergone major shifts in the last fifty years. The theoretical shifts did not follow a simple unilinear evolution, where a new theory would replace an old one, but was characterized by parallel development and convergence of divergent approaches (Waisbord 2001). This section will review the evolutions of development communication theories in order to develop insights into the theoretical linkages and significances of the current research focus in the field.

Much of development communication program in the post-WWII period was theoretically and ideologically informed by the modernization paradigm, which tried to resolve Third World problems by facilitating the transformation through information transmission in mass media of pre-modern and backward attitudes and practices of traditional societies into modern, rational and Western ways of life (Mowlana 1990). Daniel Lerner influential passing of traditional society thesis ((1958) epitomized the modernization approach in communication, positing that mass media exposure allowed people to develop a sense of

sympathy, the ability to envision and accept new ideas beyond one local conditions and traditions.

The model prioritizes top-down, one-way dissemination of modern ideas through mass media channels and is premised on a notion that mass media messages have direct impacts on the attitudes and behaviors of the receivers (Servaes 1991). In subsequent years, the model had impacts on the types of communication interventions and evaluation methods. Indicators for mass media exposure and consumption (such as UNESCO statistics on the number of television sets and newspaper consumption) were established to provide development specialists and researchers with data for quantitative measurement of media effects in developing countries (Waisbord 2001). Mass media campaigns in a number of development initiatives through the 1970s were more or less built on the presumptions of the modernization paradigm. In addition, the modernization paradigm is consistent with some of the most popular contemporary communication approaches in media campaigns, such as social marketing and entertainment-education, which employ mass media as the primary channel to transmit persuasive messages created by development specialists to the target populations.

The modernization paradigm's emphasis on the information transmission model of communication was systematically adopted in Everett Rogers highly influential diffusion of innovations theory (1962, 1983), which has served for many decades as a popular theoretical basis for development communication initiatives. In Rogers's words, the diffusion of innovations is the process by which (1) an innovation (2) is communicated through certain channels (3) over time (4) among the members of a social system ((1983).

The theory has been criticized on many fronts but chiefly for overlooking the importance of interpersonal communications in the diffusion process. However, later versions of the theory incorporated this criticism and elaborated the roles played by different types of communication channels: mass media channels are more effective in creating knowledge of innovations, whereas interpersonal channels are more effective in forming and changing attitudes toward a new idea, and thus in influencing the decision to adopt or reject a new idea (Rogers 1983). The diffusion model both resembles and differs from the

modernization paradigm. An affinity can be seen in the diffusion theory's assumption that diffusion is essentially a one-way (though, multi-step) information transmission from the sender to the receiver. In addition, the diffusion theory, by assuming that the *innovations* are, and should be, created or designed by (development) experts, shares the paternalistic conception of development underlining the modernization/Westernization thesis. However, the diffusion theory differed critically from the modernization paradigm by recognizing (1) the limits of mass media to directly provoke behavioral changes, and (2) the importance of interpersonal channels in the process of adopting new ideas. This theoretical shift was a turning point in development communication research. Researchers' attentions are now drawn to the communication mechanisms taking place within families, neighborhoods, village councils and other local contexts that previously remained unanalyzed. Not only did the diffusion theory direct attention to research in interpersonal communication, it also provided a theoretical basis to design intervention strategies that can systematically cultivate and use locally based change agents.

Several strong intellectual currents emerged in and around development communication debates during the 1970s and 1980s, coinciding with the diffusion scholars' self-criticisms of the modernization paradigm. These currents directly lead to the contemporary debates on the role of communication for development. Two strands of criticisms are particularly worth mentioning.

First, informed by critical social theories, critics from Latin America argued that the problem of underdevelopment in Third World countries was created not by the endogenous factors in these countries but by the international political economic order subjugating the South to the domination of the advanced capitalist states in the North (Frank 1969; Beltran 1976; Cardoso and Faletto 1979). This so-called Dependency theory provided a theoretical platform to the New World Information and Communication Order (NWICO) movement played out in UNESCO during the 1970s and early 1980s. Mobilized by Second and Third World countries, the NWICO movement criticized the one-way flow of information and communication from the North to the South, and called for more equitable representations of the voice of developing nations.

Second, and perhaps more importantly for issues in actual development settings, the critics of the modernization paradigm since the 1970s have proposed a variety of new development models that can be collectively called participatory approach. Examples include: Liberation Pedagogy (Freire 1970); Putting the Last First (Chambers 1983); Dialogue Paradigm (Guba 1990); Multiplicity Paradigm (Servaes 1991); Another Development (Melkote 1991; Jacobson 1994); Empowerment Approach (Friedmann 1992); Autonomous Development (Carmen 1996), among others. Communication approaches espousing the participatory model valorize some or all of the following themes: (1) the participation of the intended beneficiaries in different or all of the project-cycle stages, (2) horizontal dialogue rather than vertical information transmission, (3) cultivation of trust and mutual understanding rather than persuasion, (4) local-level actions rather than national-level programs, (5) local knowledge, (6) the role of development specialists as the facilitator and equal participants rather than decision makers, (7) communication process rather than specific outcomes, and (8) the use of communication to articulate deep-seated social relations.

There are theories or models within the context of this study that could be used to promote the cassava initiative of the federal government, which includes: the ACADA Communication Planning Matrix, the RICEE MODEL of Public Relations, the REPLACE MODEL, the Audience Participation Model and the **5ps** Social Marketing Model. However, for the purpose of this study the **5ps** of Social Marketing Model as majorly used by the National Root Crops Research Institute, Umudike, shall be examined. The **5ps** Social Marketing Model derived its strength from the original 4ps of marketing developed by McCarthy (1982) and expanded by Nwosu (1993).

1. **Product:** This is the good and service offered to the public either for further production or immediate use or consumption. It could also represent ideas which the development agents use with the intention of persuading the target audience or the beneficiaries to adopt. It could be attitudes, behaviour or cultural products. In the case of the National Root Crops Research Institute, Umudike, the product is the cassava transformation initiative of the federal government. The product is marketed to the farmers so that they could change

from the use of old cassava varieties to high yielding varieties. In this case, they have developed and released over 40 improved varieties of cassava to farmers under the mandate of the institute (Information Officer, NRCRI, Umudike, 2013).

2. **Price:** These are the charges on the federal government cassava transformation initiative. In this context, the farmers in the nine states covered by the cassava transformation campaigns are given high yielding cassava varieties at subsidized rates. The NRCRI, Umudike, organizes campaigns, workshops and outreach programmes to educate the farmers on the use of the new cassava varieties. (Information Officer, NRCRI, Umudike, 2013).
3. **Place:** This is the physical environment; it entails the physical distribution channels for the sharing of development ideas. It also evolves where development targets get access to development ideas and materials with less stress. The National Root Crops Research Institute, through its units/stations and outreach centers, in the states under its mandate organizes workshops and programmes and distribute the high cassava yielding varieties to the farmers. The farmers also have easy access to the units/stations and outreach centers where they get information and products they need (Information Officer, NRCRI, Umudike, 2013).
4. **Promotion:** This entails the appropriate media mix to ensure that the development campaign messages are made available to the target population and that the messages achieved the desired objective(s). The National Root Crops Research Institute, makes use of both the local, (town criers, traditional rulers/village heads, age -grades) and modern media, such as manuals, bulletins, video films, newsletters, word of mouth and outreach programmes to communicate the cassava transformation initiatives to the farmers (Information Officer, NRCRI, Umudike, 2013).
5. **Politics:** In the context of managing campaign for social development, politics boards on advocacy which involves securing the support of influential opinion leaders for a given intervention programme. It also involves evolving strategic means of fitting the political angles or dimensions to development

campaigns with a view to addressing realistic factors arising thereof, that are likely to impact negatively on the short, medium and long term goals of the development intervention . The National Root Crops Research Institute, in carrying out the cassava transformation campaign involves the State Government, Traditional Rulers, and Town Union Officials, seeking their supports to make the Cassava Transformation Campaign successful (Information Officer, NRCRI, Umudike, 2013).

2.4 Empirical Framework

In the process of assessing the federal government's communication campaign on cassava transformation initiatives, it is absolutely necessary to assess similar, related or other projects or studies carried out by other researchers and scholars.

Nwabueze (2007), in a paper published in the NIPR Public Relations Management and Practice Series, No. 2 (2007), examines the roles of communication and public relations strategies for food security in Nigeria, using secondary source of data, and came out with the revelations that, the type of communication required in ensuring food security is development communication, due to the fact that the problems of food security is development oriented and it is required therefore, of the communicator to understand it from this perspective in order to achieve the communication objective. He states further that, since development communication is a conscious effort by the sender to package messages aimed at persuading, encouraging and convincing the receiver to adopt and participate in actualizing a development plan; and a message dissemination to the target audience, often with a view to persuading them to adopt a positive attitude change towards a development purpose at any level in a nation, it behooves therefore, on the communicator to be very much conscious of the fact that, creating awareness on how to achieve food security requires that the message content be persuasive enough to make the audience move towards a desired direction, which could be achieved through specific media of communication ñ mass media, traditional media, outdoor media, broadcast, drama, soap opera etc. He then recommends that, communicators and public relations practitioners should work together with stakeholders in the society in lobbying to ensure that the right policies and legislations are formulated to focus attention on the Agricultural Sector; the

communication and public relations strategies should be continually evaluated to ensure results are being achieved; there should be an integrated communication approach for massive public enlightenment campaign on the need to achieve and sustain food security in Nigeria, using different languages and dialects where necessary; government and non-governmental bodies should sponsor broadcast programmes woven around food security issues in Nigeria, such as talk shows, soap operas, docudrama etc. The current study has the intention to assess the federal government's communication campaign on cassava transformation initiatives at the National Root Crops Research Institute, Umudike, Abia State.

In a study to evaluate the effectiveness of mass media on health promotion in Harlem Community, New York, Bleakley et al (2008) hold that the use of media such as television and radio has demonstrated success in increasing the awareness on health issues by creating positive attitudes and in some cases changed behaviour. This study intends to assess the effectiveness of media such as Television and Radio on the cassava transformation initiatives of the federal government at the National Root Crops Research Institute, Umudike, Abia State.

In any communication campaign, it is believed that the only way its effectiveness could be guaranteed is to create awareness and influence opinion, attitudinal and behavioural change in the target audience. These, are believed, could be achieved through campaigns focused on advertising, on television or radio, magazines, brochures, posters, newspapers, scientific reports, speaking engagements and other public relations such as events sponsorship, endorsements, internet, cell phones, electronic mails, persuasive and interpersonal communication. This position is further supported by a recent study on McDonalds new communication strategy on changing attitudes and lifestyle published in *International Journal of Marketing Studies*, vol. 1, No1 of may 2009. In that study, Tianbai (2009) hold that for positive change to occur, McDonalds needs to design nutrition messages that attract attention, make sense and help to encourage change in peoples established attitudes and behaviours to the target audience and in a scientifically precise, yet, practical and motivating manner. He goes further to hold that the preferred channels of communication focus on advertising or television or radio or magazine, prints such as brochures, posters,

scientific reports and other public relations such as events, endorsements and some new channels like internet and cell phones and so on.

A review of communication campaign in the Third-World shows that campaigns have been used in virtually every facet of rural development. All of the better reported projects have used radio as the primary mass medium. Among the more striking non-agricultural examples occurring during the late 60's and 70's have been the nutrition campaigns in Nicaragua, Tunisia, the Philippines and Tanzania, breast feeding in Trinidad and Tobago, family planning in Colombia, Honduras, Iran, Pakistan and Taiwan, and health in Tanzania (American Public Health Association, 1982). Currently, probably the most frequent application of this DSC delivery strategy is carried out by UNICEF in creating awareness of, and motivation to participate in, its Global Child Immunization Programmes.

Certainly among the best documented campaign examples were those launched in Tanzania during the 70's, namely, the 1973 health campaign, **Man is Health**, which ran for a 12 week period, and the 1975 nutrition campaign, **Food Is Life**, which extended over an 18 week period (for an extensive description and analysis of these campaigns see (Coldevin, 1979; and Hall and Dodds, 1978). Both campaigns, conducted on a national level, were built around organized, village-based study groups. About 70 000 such groups, with 15 people in each, were targeted in the first campaign and 75 000 in the second. Basic elements included a weekly half-hour radio broadcast, an accompanying text book with a specific chapter reinforcing each radio lesson, and trained group leaders supplied with study guide manuals. Radio was also used in a variety of ways to encourage enrolment. Songs written especially for the campaigns were promoted (one written for the health campaign quickly climbed to the top ten in the national hit parade), and catchy commercials were aired frequently. Several speeches were carried by the Prime Minister calling for full participation. Additional promotion materials included posters, press releases, and T-shirts and dresses bearing the campaign logos.

The target for the first campaign was one million participants, and 1.5 million for the second. Both campaigns exceeded these targets with some 2 million initially showing up for the sessions. As a result, a number of problems arose which were not initially foreseen.

Chief among these were the supplies of both study texts and group leader manuals; and because of the burgeoning numbers, some of the group leaders which had to be quickly pressed into service were inadequately trained. Some critics have also questioned the length of each campaign as being too short to expect many behavioural changes, with the length of time between campaigns, i.e., two years, dissipating the effects of one before the next began. And while positive results were recorded during the first campaign, in terms of knowledge of causes and prevention of common diseases and improvement in some health practices, no 'Before-after' impact evaluation studies were conducted in the second. The more compelling legacies of these campaigns thus rested in the guidelines they provided for orchestrating action on a national level to improve the quality of rural life, and lessons for doing it better.

A number of successful campaigns have also been undertaken in agriculture. Adhikarya and Posamentier (1987) for example, documented a rat control campaign in Bangladesh during 1983 which raised the adoption of rat control practices among targeted wheat farmers from 10 to 32%, resulting in an average harvest gain of 54 kg/hectare in treated fields. Perhaps the best known campaign, however, was that associated with the "Masagana 99" project in the Philippines during 1973 which catapulted the country toward adopting high yielding rice cultivation. "Masagana" translates as bountiful harvest with "99" referring to the project objective of achieving 99 sacks (50 kilos per sack) of unmilled rice per hectare.

The project was built around three main elements: 1) availability of high yielding seeds, fertilizers, and a simplified 16 step cultivation process; 2) credit assistance; and 3) a multi-channel mass information campaign extending over three months. The channel mix included radio broadcasting, a variety of print (bulletins, newspaper stories and posters), and intensively trained farm technologists in the 16 step methodology of rice production. Radio was used in three ways during the media intensive portion of the campaign to provide: a) motivation (jingles and spot messages were broadcast up to 20 times per day); b) information (daily 30 minute farm programme); and c) instruction (short courses were offered through the existing Farmers' University of the Air; registrants received printed materials to use with the broadcasts). In addition, television was used to kick off the

campaign and to report on its progress. After completion of the campaign, the daily farm programmes were intended to provide follow-up reinforcement.

By 1973, as a result of particularly poor harvests in the two prior years, the Philippines had to import a substantial part of its rice supplies to meet national requirements. Following the campaign in 1974, rice yields had increased by 28%, and by 1976 a 40% rise was registered over 1973 levels. By 1977 national requirements were more than met and the country began exporting its excess harvest. The project was later to be criticized, principally because of farmers' low repayment of loans (Rosario-Braid, 1983). Overall, however, "Masagana 99" was declared a considerable success (Sison, 1985), one in which the multi-media campaign played a significant role.

A final example which should be mentioned in this section is a recent FAO supported campaign carried out in Sierra Leone during 1984 (Coldevin, 1986). Following a baseline survey which assessed information levels, perceived information needs, and media access among a sampling of the intended farmer target audience, an information campaign was built around the urgent priority to expand rice production through increased cultivation of swamp farms. The two month campaign, which was carried out by the Agricultural Communication Unit, involved a mix of dedicated radio broadcasts and village based slide-tape presentations, supplemented by posters and pamphlets. Extension workers fielded questions during the group media presentations.

Post-campaign results showed that, on average, farmers involved in the exercise had increased their knowledge levels by almost 60% over baseline scores. The highest gains were noted among solely dry land, or non-rice farmers whose after-campaign scores were three times higher (307%) than baseline levels. There was also a significant, positive shift in their declared intention to develop a swamp rice operation. An additional interesting finding was that, overall, farmers who tuned in regularly to the campaign radio broadcasts exhibited almost twice the amount of information gained when compared with sporadic listeners. Perhaps most important, the project aptly demonstrated the ability of a regularly functioning, agricultural media unit to carry out an effective multi-channel communication campaign based upon expressed information needs of the target audience.

A review of the communication campaign carried out by the Agricultural Information Service (AIS) of Lesotho shows that the agency began its operations initially as a public relations service unit for the Ministry of Agriculture, with media distribution primarily confined to press releases, the public radio service, and some mobile film showings. From rather modest beginnings, it currently offers a wide range of information services. The staff component of about 40 people operates under the direction of the Chief Information Officer in eight sections comprising radio broadcasting, audio-visual aids, press and publications, graphics, library, stores, technical/maintenance, and accounts and administration. The variety of visual and print materials produced by the service encompasses posters, slide presentations, photographs, handouts, flyers, flip-charts, and a quarterly magazine. Small format video has also been recently added to the roster of media capability. By far the largest activity of AIS, however, is in radio production. Operating under the banner of "Re Bitsa Lehoai" or Calling All Farmers", eleven programmes per week are broadcast for a total of 210 minutes of air time. The regular schedule includes a Monday through Saturday 15minute,earlymorning broadcast(5.45-6.00a.m.), and an evening session beginning at 6.15 p.m. - which varies between 15 and 30 minutes - from Monday through Saturday, except for Thursday. Field interviews with progressive farmers and subject matter specialists are intermixed with traditional music, weather and market reports, and lively dramatic sequences on topics of seasonal interest.

The AIS is in an excellent position to exploit the use of broadcasting and a variety of print media. For a start, the country has a unified language, Sesotho, which, aside from English being used in parallel in the capital city of Maseru, is common to all Basutho, the indigenous people of Lesotho. As well, the literacy rate of those reading Sesotho is comparatively high among the adult population with estimates ranging between 65 and 70%. Lesotho's relatively small size and cultural homogeneity also greatly facilitates the transmission of messages for a mass audience.

AIS material is broadcast through "Radio Lesotho" which covers the lowland regions of the country well but has severe Shadows" in the mountain areas. Still, overall, a relatively high proportion of the rural population own radio sets. A recent survey (Lesotho Distance Teaching Centre, 1987) show a nation-wide radio ownership proportion of over 62%, with

the greatest concentration occurring in the arable lowlands (69%) and the lowest in the mountains (51%). Eighty percent of those with radios reported that they were in working order; and of those without sets of their own, or with sets not working, about half said they listened at a friend's or relative's house. The general radio audience is thus in the neighbourhood of 75% nationally, and almost 80% in the lowlands where the bulk of the population resides. It should be emphasized that radio is the only mass medium in Lesotho since no national television production and transmission facilities as yet exist. Television viewing fare is readily available in Maseru and larger lowland centers, however, from two South African channels but to date has made no inroads at the village level.

A large portion of AIS's efforts are directed toward aiding the Ministry's Extension Service. Administratively, the country is divided into ten districts, each having a District Agriculture Officer (DAO), a District Extension Officer (DEO), several Subject Matter Specialists (SMSs), and approximately ten Extension Workers (EAs). The SMSs are each a specialist in a particular area (e.g., crops, livestock, conservation and forestry) and, while based at district headquarters, serve as technical backstopping to extension agents in the field. Other field based personnel benefiting from AIS materials are nutrition agents who are also technically assisted from their District Headquarters. As well, AIS is frequently called upon to produce audio-visual support materials for workshops organized in six Farmer Training Centers distributed throughout the country. Following the FAO projects, the Service is also now in a position to effectively carry out multi-media campaigns and to progressively add video to as range of media-mix combinations. The roster of activities and capabilities is thus extensive and indicative of a growing reliance of the Ministry on AIS to provide timely information directly to the jamming community, and to support farmer training exercises at both the village and training centre level.

2.5 The Profile of the Organization under study

The National Root Crops Research institute, Umudike, started as a small provincial farm in 1923 and grew to a complex regional agricultural research and training station between 1955 and 1972 with the college of Agriculture established in 1955. The Federal Government took over the station in 1972 and it became known as the Federal Agricultural Research and Training Station in 1975, it was a commodity Research Institute, under

Decree No. 33 of the then Federal Military Government of Nigeria and on 1 April, 1976, it was given its present name, National Root Crops Research Institute.

The National Root Crops Research Institute, Umudike has the national mandate to conduct research into the genetic improvement, production, processing, utilization, storage and marketing of roots and tuber crops of economic importance, which include cassava. The institute also has a zonal mandate to conduct research into the total farming systems of the South-East Agro- Ecological Zone of Nigeria in order to improve the standard of living of the resource poor farmers. Experience from around the world has shown that crop campaigns to raise productivity require a close partnership with research and development of enabling technologies.

This include investing significantly in the development of improved production methods, new varieties, disease and pest diagnostic surveys, and the development of improved production methods, new varieties, disease and pest diagnostic surveys, and the development of novel cassava productions. The institute in its 2012 Annual Research, Review and Planning Workshop held from the 17th to 19th April, 2012 states that a vital step towards achieving the agricultural transformation agenda will be to unlock the potentials of roots and tuber crops through market oriented and demand-driven research. From the national and zonal mandates, the institute is strategic and well positioned to the achievement of the agricultural transformation agenda. In the cassava transformation agenda part of the value chains as outlined by the Minister of Agriculture and Rural Development Dr. Adesina include development and production of high quality cassava flour, starch/sweeteners, chips/pellets for livestock feed, fuel, ethanol and gari/fufu etc. The institute has expertise for these arrays of products.

The institute in collaboration with IITA has developed and released to farmers a total of 40 varieties. The first three are yellow root pro-vitamin A cassava varieties for which HMA visited the institute and formally launched on 16th March, 2012.

The institute is therefore on course as far as the Agricultural Transformation Agenda of the Federal Government in the area of cassava is concerned, its campaigns are being carried out in seven states and six sub stations. The states includes Abia, Akwa Ibom, Anambra,

Bayelsa, Ebonyi, Enugu and Imo while the substations are located in Kuru (Plateau State), Gassol (Taraba State), Nyanya (FCT) and Maro (Kaduna State).

It has thirty (30) personnel directly involved in the campaign with Dr Adeyemi Olojede as the coordinator. There are also 5 directors in charge of different activities which are as follows

1. Breeders/ multiplication projects handled by Dr Eke Okechukwu Okoro.
2. Demonstration /Agronomic projects also handled by Dr Eke Okoro.
3. Village adoption by Dr Asumugha.
4. Breeding for high quality cassava starch by Dr Emmanuel Okogbemin and Dr Egezi
5. Development of 40% cassava flour for bread baking by Dr Emmanuel Oti

2.6 Summary of the Reviewed Literature

The literature reviewed in this work was those that have relevance to communication campaign and agricultural transformation and especially the cassava transformation of the federal government. The reviewed literature, among many things has strengthened this study.

The reviewed covered various contributions of many authorities on communication and agriculture. The main essence being to determine best way communication campaigns can be used to sell the cassava transformation initiatives of the federal government, geared towards influencing the people, particularly the farmers to change from old ways of cassava cultivation to a modern cultivation of high yielding and bulky cassava. The works of many researchers, theorists and modelers were critically reviewed in this chapter.

The issue reviewed and discussed in this chapter include: overview of communication campaign; communication campaign strategies; communication campaign strategies for rural development; prospects and challenges of development communication initiatives; generalizations for communication campaign planners; a methodology of campaign design; evaluating communication; communication campaign mix; the agricultural transformation agenda of the federal government of Nigeria; an overview of the action plan for cassava transformation in Nigeria; Theoretical models in communication for development; and empirical framework.

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CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The Research Methodology was discussed under the following headings: Research design, Sources of data collection, Area of study, Population of study, Sample size, Instrument of data collection, Validity and Reliability of Instruments and Method of data analysis.

3.2 Research Design

The study adopted the survey research method/design. The survey research design involves the use of questionnaire and interview which were used as major data gathering instruments.

3.3 Sources of Data Collection

Two sources were employed in the quest to gather information for this study. They are primary and secondary data.

3.3.1. Primary Data

Primary data sources are first hand data. The survey method which embraces the use of questionnaire and interview were used as primary data gathering instruments.

3.3.2 Secondary Data

These are obtained second hand from published and recorded sources. The researcher therefore obtained her secondary data source from dictionaries, internet, textbooks, Journals, Newspapers, Magazines and unpublished articles.

3.4 Area of Study

The geographical scope of this study includes the nine states covered by the National Root Crops Research Institute (NRCRI), Umudike, and these are: Abia State, Akwa-Ibom State, Anambra State, Bayelsa State, Cross-River State, Ebonyi State, Enugu State, Imo State and Rivers State.

3.5 Population of Study

The population of study consists of the management and staff of the National Root Corps Research Institute, at both the head-quarters, Umudike, Abia State and the institutes various units/stations in Akwa-Ibom State, Anambra State, Bayelsa State, Cross-River State, Ebonyi State, Enugu State, Imo State and Rivers State. From the information given by the Information Officer of NRCRI, Umudike, the staff strength is 1,800.

3.6 Determination of the Sample Size

The judgmental sample size was adopted for this research. This is because out of the 1,800 staff strength, only 1,200 staff was available, willing and able to read, understand and fill the questionnaire properly to elicit the desired information. Therefore, 1,200 were considered the sample size for this study.

3.7 Allocation of Questionnaire

The questionnaire copies were distributed among all staff of the organization, both at the head-quarters and units/stations with the help of some volunteer staff.

3.8 Instrument of Data Collection

The Instrument of data collection was the questionnaire structured into sections, and the interview guide.

3.9 Validity and Reliability of Instrument

Validity: Face validity was achieved by superficial examination of the instrument by the supervisor to ensure that the content of the instrument is truly assigned the required question to get answer to the problem of the study. The researcher made all necessary corrections and based on her judgment on the certification of the supervisor ensured that the questions actually measured what it is supposed to measure.

Reliability: To measure for reliability of the instrument, a pilot study was conducted on 20 staff of the Institute. These staff were selected randomly and their responses were tested for inter item consistency. A cronbach's alpha value of 0.823 was obtained indicating a

very strong reliability since it is large and tending to 1, therefore the instrument is reliable for the study.

3.10 Method of Data Analysis

Descriptive statistics which include frequencies and percentages were used to answer the research questions whereas inferential statistic which includes chi-square test and one sample T test was used to test the hypotheses postulated. Hypotheses one, two and three were tested using chi square test while hypothesis four was tested using one sample T test . Both the descriptive and inferential statistic was analyzed using statistical package for social sciences (SPSS) package 15.00.

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CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.1 Introduction

In this chapter, the data collected from the survey are presented and analyzed.

Table 4.1: Distribution and return of questionnaire

Questionnaire Distributed	% distributed	Questionnaire returned	% returned	Questionnaire not returned	% not returned
1,200	100%	1095	91.25%	105	8.75%

Source: field survey 2013

In the table above 1,200 (100%) questionnaire were distributed, 1095 (91.25%) were returned while 105 (8.75%) were not returned. This implies that the analysis was done based on the 1095 forms that were returned.

4.2 Demography of Respondents

Table 4.2: Distribution of Respondents by Sex

Sex	Frequency	Percentage
Male	195	17.81%
Female	900	82.19%
Total	1095	100.%

Source: field survey 2013

The presentation above shows that 195(17.81%) of the respondents are males while 900(82.19%) of them are females. This means that more females were interviewed during the research work.

Table 4.3: Distribution of Respondents by Age

Age	Frequency	Percentage
15-20 years	100	9.1%
21-30 years	150	13.7%
31-40 years	700	63.9%
41-50 years	100	9.1%
51 and above	45	4.1%
Total	1095	100.%

Source: field survey 2013

The analysis on table 3 shows that 100(9.1%), 150(13.7%) and 700(63.9%) of the respondents are aged between the age of 15-20years, 21-30 years and 31-40 years respectively whereas 100(9.1%) and 45(4.1%) of them are aged between 41-50 years and 51 years and above respectively. This implies that a greater number of respondents interviewed during the research work are ages between 31-40 years followed by 21-30 years respectively.

Table 4.4: Distribution of Respondents by Marital Status

Marital Status	Frequency	Percentage
Single	58	5.3%
Married	1037	94.5
Divorced	0	0
Separated	0	0
Total	1095	100.%

Source: field survey 2013

The presentation above indicates that 58 or 5.3% of the respondents are single while 1037 or 94.5% of them are married. This is an indication that more married people were interviewed during the research work.

Table 4.5: Distribution of Respondents by Educational Qualification

Educational Qualification	Frequency	Percentage
FSLC	100	9.1%
WASE/SSCE	295	26.9%
NCE/ND/HND	300	27.4%
Degree	400	36.5%
Total	1095	100.%

Source: field survey 2013

Table 4.5 above indicates that 100 or 9.1%, 295 or 26.9% and 300 or 27.4% of the respondents have FSLC, WASE/SSCE and NCE/ND/HND respectively while 400 or 36.5% of them have Degrees. The implication of this is that more degree holders gave answers to the given questionnaire.

Table 4.6: Distribution of Respondents According to Years of Service

Years of Service	Frequency	Percentage
One year	97	8.8%
Two years	98	8.9%
Three years	120	10.9%
Four years	180	16.4%
Five years and above	600	54.7%
Total	1095	100.%

Source: field survey 2013

It is indicated in table 6 above that 97 or 8.8%, 98 or 8.9% and 120 or 10.9% of the respondent have worked for one year, two years and three years respectively in the organization whereas 180 or 16.4% and 600 or 54.9% of them worked for four years and five years and above respectively.

Section B: Substantive Issues Analysis of Research Questions

Table 4.7: Knowledge Level of the Federal Government Cassava Transformation Campaign

Knowledge Level	Frequency	Percentage
Yes	985	89.9%
No	105	9.6%
Indifferent	5	0.5%
Total	1095	100.%

Source: field survey 2013

In table 4.7 above, the analysis of knowledge level of respondents concerning the Federal Government Cassava Transformation Campaign is shown. 985 representing 89.9% of the respondents were of the opinion that they have heard of the Federal Government Cassava Transformation Campaign, 105 representing 9.6% have not heard of it while 5 representing 0.5% of them were indifferent.

It can therefore be deduced from the analysis that most of the respondents interviewed have heard of the Federal Government Cassava Transformation Campaign.

Table 4.8: Respondents in-depth understanding level of what the Federal Government Cassava Transformation Campaign Agenda is all about

In-depth understanding	Frequency	Percentage
Yes	1050	95.9%
No	45	4.1%
Indifferent	0	0%
Total	1095	100.%

Source: field survey 2013

The presentation above shows the analysis of the respondents in-depth understanding of what the Federal Government Cassava Transformation Campaign is all about, from the presentation 1050 representing 95.9% of the respondents are of the opinion that they have an in depth understanding of what the Federal Government Cassava Transformation Campaign is all about, while 45 representing 4.1% of them were of the opinion that they do not understand.

It can therefore be deduced from the analysis that a greater number of the respondents interviewed understand clearly what the Federal Government Cassava Transformation Campaign is all about.

Table 4.9: Knowledge of National Roots Crops Research Institute Involvement in the Campaign

Involvement	Frequency	Percentage
Yes	1065	97.2%
No	25	2.3%
Indifferent	5	0.5%
Total	1095	100.%

Source: field survey 2013

The analysis above indicates the knowledge of respondents as regards the National Root, Crops Institute's Involvement in the Cassava Transformation Campaign. It shows that 1065 representing 97.2% of the respondents are aware that the National Roots Crops Institute is involved in the Cassava Transformation Campaign on behalf of the Federal Government, 25 representing 2.3% are of the view that they are not aware while 5 representing 0.5% of them are indifferent about the issue. Based on the forgoing therefore it implies that more than half of the respondent are aware of the National Roots Crops Involvement in the Cassava Transformation Campaign on behalf of the Federal Government.

Table 4.10: Respondents direct Involvement in the Institute's Cassava Transformation Campaign

Direct Involvement	Frequency	Percentage
Yes	36	3.29
No	1059	96.71
Indifferent	0	0
Total	1095	100.%

Source: field survey 2013

The respondents' direct involvement in the Institute's cassava transformation campaign on behalf of the Federal Government is presented above. It shows that 36 representing 3.29% of the respondents are directly involved in the institute's cassava transformation campaign while 1059 representing 96.71% of them are not directly involved in the campaign. It goes on to show that less than 5% of the respondents are directly involved in the campaign.

Table 4.11: Promotional Mix Employed by the Institute in the Campaign

Promotional Mix	Frequency	Percentage
Manuals	5	13.9
Bulletins	5	13.9
Information racks	0	0
Press releases	2	5.6
Newsletters	2	5.6
Circular & memos	0	0
Closed circuit TV	0	0
Word of mouth	5	13.9
Video film/discs	0	0
Newspaper	2	5.6
Newsmagazine	2	5.6
Television	1	2.8
Radio	10	27.8
Billboards	0	0
Posters	0	0
Handbills	0	0
Grapevine	0	0
Pressure group	0	0
Special events	2	5.6
Total	36	100.%

Source: field survey 2013

Table 4.11, is a representation of the various promotional mix employed by the National Root Crops Research Institute, in the cassava transformation campaign that they are carrying out on behalf of the federal government. It shows that 5 representing 13.9%, 5 representing 13.9%, 2 representing 5.6% and 2 representing 5.6% of the respondents that are directly involved in the campaign were of the view that the promotional mix used by the institute are manual, bulletins, press releases and newsletter respectively.

In the same vein, 5 representing 13.9%, 2 representing 5.6%, and 2 representing 5.6% are of the opinion that word of mouth, Newspaper and News magazines are among the promotional mix they employed in the campaign respectively. Finally, 1 representing 2.8%, 10 representing 27.8% and 2 representing 5.6% of them mentioned television, radio and special events as among the promotional mix the institute employed in the campaign.

This indicates that radio, manuals, bulletins, word of mouth, press releases, Newsletters, Newspaper, Newsmagazine, special events and finally television are some of the communication campaign mixes been employed by the national root crops institute during the campaign in that order.

Table 4.12: Communication Campaign Models Employed by the Institute in the Campaign

Communication Campaign Models	Frequency	Percentage
The ACADA communication planning matrix	6	16.7%
The RICEE model of Public Relations	5	13.9%
The REPLACE model	0	0
The audience participation model	10	27.8%
The 5ps of social marketing	15	41.7%
Total	36	100.%

Source: field survey 2013

The presentation above shows that 6(16.7%), 5(13.9%) and 10(27.8%) of the respondents that are directly involved in the campaign are of the opinion that they employed the ACADA Communication Planning Matrix, the RICEE Model of Communication Campaign and the Audience Participation model in the campaign respectively while 15(41.7%) of them said they make use of the 5ps of social marketing model majorly in their communication campaign.

From the analysis we can deduce that the institute used more of the 5ps of social marketing, followed by the, Audience Participation model, the ACADA Communication Planning Matrix and the RICEE Model of Communication Campaign in that order.

Table 4.13: Communication Campaign Mix and Strategies Effectiveness

Variable	SD		D		I		A		SA	
	F	%	F	%	F	%	F	%	F	%
The use of video films and video disc in training the local farmers in adopting the federal government cassava transformation campaign has been very effective	96	8.8	1000	91.3	-	-	-	-	-	-
The use of radio by the institute for the transformation campaign has made for coverage spread.							40	3.7	1050	95.9
Newspapers have helped the institute in spreading the campaign effectively farmers.					10	0.91	980	89.5	105	9.6
Word of mouth and grapevine helps spread the cassava transformation campaign.									1095	100
The spread of news magazines among farmers has been very effective in reaching the target audience with the cassava transformation agenda of the federal government.	5	0.5	90	8.2	20	1.8	800	73.1	180	16.4
The institute has made sure that the farmers have understood the federal government cassava transformation agenda and know the price and place where they can assess information.									1095	100
The institute has carried out an assessment of communities they are working in and know the best communication mix that they would use in each community.							1050	95.9	40	3.7
The institute used the information they get from community analysis for education of the target audience									1095	100
The institute has a campaign team for the cassava transformation campaign.									1095	100

The campaign team has a headquarters from where they operate.					20	1.8	1050	95.9	20	1.8
The campaign team has a campaign plan with realistic, realizable, flexible, measurable and clear objectives.	5	0.5	290	26.5	-	-	800	73.1	-	-
Funds for the campaign are adequately allocated, released and managed.	96	8.8	1000	91.3	-	-	-	-	-	-
The campaign teams have a media plan, media mix and media strategy that are clear to the target audience.	40	3.7	105	9.6	40	3.7	500	45.7	410	37.4
Materials for the campaign has already been designed, printed and produce for use.							800	73.1	290	26.5
The audience strategy for the campaign has been worked out in line with the uses and gratification theory.	70	6.4	15	1.4	20	1.8	900	82.2	100	9.1
The campaign team has reached the implementation stage in any of the states they are covering.								1095	100	
An appropriate monitoring and evaluation strategy is in place to ensure that the campaign objectives are achieved.	90	8.2	180	16.4	5	0.5	20	1.8	800	73.1

Source: field survey 2013

Table 4.13 above shows that 96(8.8%) of the respondents strongly disagreed that the use of video films and video disc in training the local farmers to adopt the federal government cassava transformation campaign has been very effective while 1000(91.3%) of them disagree to that fact.

Also 40(3.7%) of the respondents agree that the use of radio by the institute for the transformation campaign has made for coverage spread, while 1050(95.9%) of them strongly agreed to that fact.

10(0.91 and 980(89.5%) of the respondents were indifferent and agreed to the fact that newspaper have helped the institute in spreading the campaign effectively to the local farmers respectively whereas 105(9.6%) of them strongly agree to that fact.

All the respondents strongly agreed that word of mouth and grapevine helped spread the information about the cassava transformation campaign.

In the same vein, 5(0.5%), 90(8.2%) and 20(1.8%) of the respondents strongly disagree, disagree and were indifferent about the fact that the spread of News magazine among farmers has been very effective in reaching the target audience with the cassava transformation agenda of the federal government respectively while 800(73.1%) and 180(16.4%) of them agree and strongly agree to that fact.

Also all the respondents strongly agreed that the institute has made sure that the farmers have understood the federal government cassava transformation initiatives and know the price and place where they can assess information about the campaign.

1050(95.9%) of the respondents agree that the institute has carried out an assessment of the communities they after working in and know the best communication mix that they will use in each community while 40(3.7%) of them strongly agree to the fact. Also all the respondents strongly agree that the institute uses the information they get from the community analysis for education of the target audience, and has a campaign team for the cassava transformation campaign.

20(1.8%) and 1050(95.9%) of the respondents are indifferent and agree that the campaign team has a headquarters from where they operate respectively whereas 20(1.8%) of them strongly agreed to that fact.

5(0.5%) and 290(26.5%) of the respondents strongly disagree and disagree that the campaign team has a campaign plan with realistic, realizable, flexible, measurable and clear objectives respectively whereas 800(73.1%) of them agree to the fact. 96 representing

8.8% of the respondents strongly disagree that funds for the campaign are adequately allocated, released and managed while 1000 representing 91.3% of them disagree to that fact.

40 representing 3.7%, 105 representing 9.6% and 40 representing 3.7% of respondents strongly disagree, disagree and are indifferent to the fact that the campaign team have a media plan, media mix and media strategy that are clear to the target audience respectively while 500 representing 45.7% and 410 representing 37.4% of them agree and strongly agree to the fact respectively.

800 representing 73.1% of the respondents agree that materials for the campaign have already been designed printed and produced for use while 290 representing 26.5% of them strongly agree to that fact.

70 representing 6.4%, 15 representing 1.4% and 20 representing 1.8% of the respondents strongly disagree, disagree and are indifferent to the fact that the audience strategy for the campaign has been worked out in line with the uses and gratification theory respectively while 900 representing 82.2% and 100 representing 9.1% of them agree and strongly agreed to the fact. All the respondents agree that the campaign team has reached the implementation stage in any of the states they are covering.

Finally, 90 representing 8.2%, 180 representing 16.4% and 5 representing 0.5% of the respondents strongly disagree, disagree and are indifferent to the fact that an appropriate monitoring and evaluation strategy is in place to ensure that the campaign objectives are achieved respectively, whereas 20 representing 1.8% and 800 representing 73.1% of them agree and strongly agreed to the fact.

4.3 Test of Hypothesis

Ho1: The National Root Crops Research Institute, Umudike, is not marketing the cassava transformation campaign initiatives of the federal government.

Variable	Yes		No		Indifference		Df	X ²	P value	Decision
	F	%	F	%	F	%				
Have you heard about the federal government transformation campaign initiatives?	985	89.9	105	9.6	5	0.5	2	352.497	<001	Significantly low
Do you know what the federal government transformation campaign initiatives is all about?	1050	95.9	45	4.1		0		385.285	<001	Significantly low
Do you know if the National Root Crops Research Institute, is involved in cassava transformation campaign initiatives on behalf of the federal government?	1065	97.7	25	2.3	5	0.5		281.226	<001	Significantly low
Are you directly involved in the institute's cassava transformation campaign initiatives of the federal government?	36	3.29	1059	96.71	0	0		356.487	<001	Significantly low

Source: field survey 2013

Decision Rule

The significant value of the chi square statistics (352.497, 385.285, 281.226 and 356.487) is less than 0.05 hence we reject the null hypothesis and accept the alternative which states

as: The National Roots Crops Research Institute, Umudike, is marketing the cassava transformation campaign initiatives of the Federal Government.

Hypothesis Two

Ho: There is no communication campaign mix being employed by the National Root Crops Research Institute, Umudike, in marketing the cassava transformation initiatives of the federal government.

Variable	Frequency	Percentage	df	X²	P value	Decision
Manuals	5	13.9	4	423.427	<001	Significantly low
Bulletins	5	13.9	4	423.427	<001	Significantly low
Press Releases	2	5.6	4	423.427	<001	Significantly low
Newsletter	2	5.6	4	423.427	<001	Significantly low
Word Of Mouth	5	13.9	4	423.427	<001	Significantly low
Newsmagazine	2	5.6	4	423.427	<001	Significantly low
Radio	10	27.8	4	423.427	<001	Significantly low
Special Event	2	5.6	4	423.427	<001	Significantly low

Source: field survey 2013

Decision Rule

The significant value of the chi-square statistics (423.497) is less than 0.05 hence we reject the null hypothesis and accept the alternative.

Therefore, communication campaign mixes have been employed by the National Roots Crop Research Institute, Umudike, in marketing the cassava transformation initiatives of the federal government.

Hypothesis Three

Ho: There are no communication campaign models being employed by the National Root Crops Research Institute Umudike in the campaign.

Variable	Frequency	Percentage	Df	X ²	P value	Decision
The ACADA communication planning matrix.	6	16.7%	2	352.497	<001	Significantly low
The RICEE model of public relations.	5	13.9%	2	352.497	<001	Significantly low
The REPLACE model	0	0	2	352.497	<001	Significantly low
The AUDIENCE PARTICIPATION model.	10	27.8%	2	352.497	<001	Significantly low
The 5Ps of social marketing.	15	41.7%	2	352.497	<001	Significantly low

Source: field survey 2013

Decision Rule

The significant value of the chi-square statistics (352.497) is less than 0.05 hence we reject the null hypothesis and accept the alternative.

Therefore, there are communication campaign models being employed by the national roots crops research institute in the campaign.

Hypothesis Four

The various communication campaigns strategies being employed by the National Root Crops Research Institute, has not significantly enhanced the marketing of the product (cassava transformation initiatives) of the federal government.

The use of the video films and video disc in training the local farmers in adopting the federal government cassava transformation campaign has been effective.	1095	4.3782	1.12905	1094	23.983	<0.01	Significant
The use of radio by the institute for the transformation campaign has made for coverage spread	1095	4.3472	1.092	1094	24.227	<0.01	Significant
Word of mouth and grapevine helps spread the cassava transformation campaign.		3.1835	0.89815	1094	17.795	<0.01	Significant
The spread of newsmagazine among farmers has been very effective in reaching the target audience with the cassava transformation campaign of the federal government.	1095	5.00	0.0000	0	0	<0.01	Significant
The institute has made sure that the farmers have understood the federal government case.	1095	3.8756	0.8129	1094	21.179	<0.01	Significant
The campaign team has a headquarters from where they operate.	1095	4.3382	1.098	1094	21.820	<0.01	Significant
The campaign team has a campaign plan with realistic, realizable, flexible, measurable and clear objectives.	1095	3.283	0.8914	1094	18.796	<0.01	Significant

Funds for the campaign are adequately allocated, released and managed.	1095	2.284	0.714	1094	16.826	<0.01	Significant
The campaign teams have a media plan, media mix and media strategy that are clear to the target audience.	1095	2.8762	0.8125	1094	21.560	<0.01	Significant
Materials for the campaign has already been designed, printed and produce for use.	1095	3.253	1.098	1094	20.572	<0.01	Significant
The audience strategy for the campaign has been worked out in line with the uses and gratification theory.	1095	4.826	1.2916	1094	17.247	<0.01	Significant
The campaign team has reached the implementation stage in any of the states they are covering.	1095	4.3772	1.092	1094	24.227	<0.01	Significant
An appropriate monitoring and evaluation strategy is in place to ensure that the campaign objectives are achieved.	1095	4.1835	0.8915	1094	23.156	<0.01	Significant

Source: field survey 2013

Interpretation of table

The use of video films and video disc in training the local farmers in adopting the federal government cassava transformation campaign initiatives has been effective with a mean of 4.3782 and a standard deviation of 1.2905. The use of radio by the institute for the transformation campaign has made for coverage spread, has a high mean of 4.3472 and a standard deviation of 1.092.

Newspapers have helped the institute in spreading the campaign effectively to the local farmers, has a mean of 3.1835 and a standard deviation of 0.8915.

Word of mouth and grapevine help spread the cassava transformation campaign initiatives, the spread of newsmagazine among farmers has been very effective in reaching the target audience with the cassava transformation campaign of the federal government and the institute has made sure that the farmers have understood the federal government cassava transformation campaign initiatives and know the price and place where they can assess information have the means of 5.000, 3.8756 and 4.2875 and standard deviation of 0.0000, 0.8129 and 1.2915 respectively.

The institute has carried out an assessment of the communities they are working in and know the best communication mix that they would use in each community, the institute uses the information they get from the community analysis for education of the target audience and the institute has a campaign team for the cassava transformation campaign initiatives, has means of 4.3382, 3.283 and 3.8752 and standard deviations of 1.098, 0.8914 and 0.8129 respectively.

Also the campaign team has a headquarters from where they operate, the campaign team has a campaign plan with realistic, realizable, flexible, measurable and clear objectives, and funds for the campaign are adequately allocated, released and managed has means of 5.000, 4.186 and 2.284 and a standard deviations of 0.000, 1.3864 and 0.714 respectively.

In the same vein, the campaign team have a media plan, media mix and media strategy that are clear to the target audience, materials for the campaign has already been designed printed and produced for use and the audience strategy for the campaign has been worked out in line with the uses and gratification theory has means of 2.8762, 3.253 and 4.826 and standard deviations of 0.8126, 1.098 and 1.2916 respectively.

Finally, the campaign team has reached the implementation stage in any of the states they are covering and an appropriate monitoring and evaluation strategy is in place to ensure

that the campaign objective has means of 4.3772 and 4.1835 and standard deviation of 1.092 and 0.8915.

The one sample t-test reveals that the various communication campaign strategies have significantly enhanced the marketing of the cassava transformation campaign initiatives of the federal government ($t = 23.983, 24.227, 17.795, 0, 21.179, 20.983, 21.820, 18.796, 17.256, 0, 22.845, 16.826, 21.560, 20.572, 17.247, 24.227$ and $23.156, p_v = < 0.01$).

Decision Rule

Hence, based on the t-test result, we reject the null hypothesis and accept the alternative hypothesis that the various communication campaign strategies being employed by National Root Crops Research Institute have significantly enhanced the marketing of the product (cassava transformation initiatives) of the federal government.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of Findings

The study assessed the communication campaign mix of the federal government cassava transformation campaign as carried out by the National Root Crops Research Institute, Umudike, Abia State. The survey research method using questionnaire was used to obtain data from the respondents. More than half of the questionnaires were returned in useable form which was used for the analysis of the raw data obtained. A greater percentage of the respondents interviewed in the cause of the research were females, married and aged between 31-40 years. They were also degree holders that have also worked for about five years and above. It was shown that most of the respondents interviewed have heard and have in-depth understanding of the federal government cassava transformation campaign. It was also shown that a greater percentage of the people interviewed were not directly involved in the cassava transformation campaign of the federal government.

Findings reveal that radio, manuals, bulletins, word of mouth, press releases, newsletters, newspaper, newsmagazine, special events and television are some of the communication campaign mix employed by the National Root Crops Research Institute, Umudike, in the campaign. Likewise as regards the communication campaign model been employed by the institute during the campaign, especially the 5ps of social marketing of communication campaign model were employed.

On the effectiveness of the communication campaign strategies, it was revealed that the use of radio, newspaper and newsmagazine was effective, while having an assessment of the communities and teaching or educating the target audience based on the community analysis were effective. Also having a clear campaign plan that is realistic, realizable, flexible, and measurable, with clear objective by the campaign team, having a media plan, media mix and media strategy having the materials for the campaign already printed were all effective in the campaign.

The research work was highly descriptive and inferential in nature. This involved the use of tables and sample percentages as basic descriptive statistical technique employed to analyze the raw data which was obtained from primary sources. The raw data was subsequently subjected to chi-square test and one sample t-Test as major tool for hypothesis testing and hypothesis. The alternate hypotheses of the four hypotheses formulated were all accepted showing that the National Roots Crops Research Institute, Umudike, Abia State is marketing the cassava transformation campaign initiatives of the Federal Government, Communication Campaign Mix has been employed by the National Roots Crops Research Institute, in marketing the product of the Federal Government, Communication Campaign Models have been employed by the National Root Crops Research Institute, Umudike, Abia State in the campaign and that the Communication Campaign Promotional Mix employed by the institute has significantly enhanced the marketing of the cassava transformation campaign initiatives of the federal government.

5.2 Conclusion

Communication Campaign Mix is a marketing tool which when used effectively can enhance public interest as regards activities and programmes of both government and ordinary citizens. Communication Campaign Mix seeks to carry out those activities which will help realize the objectives of promotions which focuses on convincing the target public on the need to accept whatever is being presented and in this case, it is the federal government cassava transformation campaign initiatives, it is hoped that using communication campaign strategies, the message about the campaign would have reached the target audience.

5.3 Recommendations

- 1) For other campaigns more staff should be directly involved for more productivity as only 36 staff of the institute were directly involved.
- 2) Funds made for the campaign and other such activities should be released on time for work.
- 3) In future campaigns more communication campaign mix and strategies should be explored.

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Appendix I

Faculty of Business Administration,
Department of Marketing,
University of Nigeria,
Enugu Campus.
June, 2013

Dear Respondent,

I am a postgraduate student of the above named institution and department conducting a research on Assessing of the Federal Government's Communication Campaign on Cassava Transformation as carried out by the National Root Crops Research Institute (NRCRI), Umudike, Abia State. I will be grateful if you kindly help me in completing this questionnaire your views will be held in strict confidence.

Yours faithfully,

OZOALOR CHIGOLUM C.

PG/M.Sc/09/53695

Appendix II

A Questionnaire for the Staff and Management of the National Roots Crops Research Institute (NRCRI), Umudike, Abia State.

SECTION A: Personal data of respondents. Please indicate the right answers by ticking (✓) in the appropriate box.

- 1) Sex: (a) Male [] (b) Female []
- 2) Age: (a) 15 ñ 20 years []
(b) 21- 30 years []
(c) 31 ñ 40 years []
(d) 41 ñ 50 years []
(e) 50 and above []
- 3) Marital Status:
(a) Single []
(b) Married []
(c) Divorced []
(d) Separated []
- 4) Educational Qualification:
(a) FSLC []
(b) WASE/SSCE []
(c) NCE/ND/HND []
(d) Degree []
(e) Others (specify) -----
- 5) How long have you been working at the National Roots Crops Research Institute, Umudike, Abia State:
(a) One year []
(b) Two years []
(c) Three years []
(d) Four years []
(e) Five years and above []

SECTION B: Substantive Issues

- 6) Have you heard about the Federal Government Cassava Transformation Initiative/Program?
- (a) Yes []
- (b) No []
- (c) Indifferent []
- 7) Do you know what the Federal Government Cassava Transformation Initiative/Program is all about:
- (a) Yes []
- (b) No []
- (c) Indifferent []
- 8) Do you know if the National Roots Crops Research Institute, is involved in the Cassava Transformation Campaign on behalf of the Federal Government:
- (a) Yes []
- (b) No []
- (c) Indifferent []
- 9) Are you directly involved in the institute's cassava transformation campaign initiatives of the federal government
- A) yes b) No c) indifferent
- 10) Tick for the various Communication campaign mix being employed by the National Roots Crops Research Institute, Umudike, Abia State in the Campaign:
- (a) Manuals []
- (b) Bulletins []
- (c) Information racks []
- (d) Press releases []
- (e) News letters []
- (f) Circulars and memos []
- (g) Closed circuit television []
- (h) Word of mouth []

- (i) Video films. Video discs []
- (j) Newspapers []
- (k) News magazines []
- (l) Television []
- (m) Radio []
- (n) Billboards []
- (o) Posters []
- (p) Handbill []
- (q) Grapevine []
- (r) Pressure group []
- (s) Special events []

Tick, SD, D, I, A and SA in the response to the following questions: note SD = Strongly disagree, D = Disagree, I = Indifferent, A = Agree, SA = Strongly Agree.

11) Tick for the Communication campaign model being employed by the Institute in the campaign:

- (a) The 5P(s) of social marketing []
- (b) The ACADA Communication Planning Matrix []
- (c) The RICEE Model of Public Relations []
- (d) The REPLACE Model []
- (e) The Audience Participation Model []

Tick SD, D, I, A and SA for the following statements. Note that SD= Strongly disagree, D= disagree, I = indifferent, A= agree and SA= strongly agree

12) The use of video films and video disc in training the local farmers in adopting the federal government cassava transformation campaign has been very effective:

- (a) SD []
- (b) D []
- (c) I []
- (d) A []
- (e) SA []

13)The use of radio by the institute for the transformation campaign has made for coverage spread:

- (a) SD []
- (b) D []
- (c) I []
- (d) A []
- (e) SA []

14)Newspapers have helped the institute in spreading the campaign effectively to local farmers:

- (a) SD []
- (b) D []
- (c) I []
- (d) A []
- (e) SA []

15)Word of mouth and grapevine helps spread the cassava transformation agenda of the federal government:

- (a) SD []
- (b) D []
- (c) I []
- (d) A []
- (e) SA []

16)The spread of news magazines among farmers is very effective in reaching the target audience with the cassava transformation campaign of the federal government:

- (a) SD []
- (b) D []
- (c) I []
- (d) A []
- (e) SA []

17)The institute has made sure that the farmers understood the federal government's cassava transformation campaign and know the price and the place where they can assess information:

- (a) SD []
- (b) D []
- (c) I []
- (d) A []
- (e) SA []

18)The institute has carried out an assessment of the communities they are working in and know the best communication mix that they would use in each community:

- (a) SD []
- (b) D []
- (c) I []
- (d) A []
- (e) SA []

19)The institute uses the information they get from community analysis for education of the target audience:

- (a) SD []
- (b) D []
- (c) I []
- (d) A []
- (e) SA []

21) The Institute has a campaign team for the cassava transformation campaign

- (a) SD []
- (b) D []
- (c) I []
- (d) A []
- (e) SA []

- 22) The campaign team has a headquarters from where they operate
- (a) SD []
 - (b) D []
 - (c) I []
 - (d) A []
 - (e) SA []
- 23) The campaign team has a campaign plan with realistic, realization, flexible, measureable and clear objectives
- (a) SD []
 - (b) D []
 - (c) I []
 - (d) A []
 - (e) SA []
- 24) Funds for the campaign are adequately allocated, released and managed?
- (a) SD []
 - (b) D []
 - (c) I []
 - (d) A []
 - (e) SA []
- 25) The campaign team has a media plan, media mix and media strategy that are very clear accessible by target audience
- (a) SD []
 - (b) D []
 - (c) I []
 - (d) A []
 - (e) SA []
- 26) Materials for the campaign already designed, printed and produced for use
- (a) SD []
 - (b) D []
 - (c) I []
 - (d) A []
 - (e) SA []

27. The audience strategy for the campaign has been worked out in line with the uses and gratification theory
- (a) SD []
- (b) D []
- (c) I []
- (d) A []
- (e) SA []
28. The campaign have reached the implementation stage in the states that the institute is covering
- (a) SD []
- (b) D []
- (c) I []
- (d) A []
- (e) SA []
29. An appropriate monitoring and evaluation strategy is in place to ensure that the campaign objectives are achieved and that everything goes according to plans
- (a) SD []
- (b) D []
- (c) I []
- (d) A []
- (e) SA []
- 30) Is there any other information you know about the institute's cassava transformation campaign initiatives of the federal government?

THANK YOU