

# EVALUATION OF AGRICULTURAL EXTENSION MESSAGES THAT SUPPORT ADOPTION OF IMPROVED CASSAVA PRODUCTION TECHNOLOGIES: A CASE OF PUBLIC AND PRIVATE SECTOR EXTENSION IN RIVERS STATE, NIGERIA

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**Abstract:** Research on improved cassava varieties in Nigeria was championed by IITA to enhance food security. Most new varieties had enormous advantages over the local varieties that had familiar terrain; hence mass adoption should be advocated.

The public extension services adopted Training and Visit (T & V) system to canvas for adoption of the improved varieties. Similarly, the private sector extension system of the oil and gas companies bombarded same farmers with similar messages on improved cassava varieties. It appeared that the public and private sector extension approaches did not yield anticipated results as cultivation of local varieties was still on the increase in Rivers State, Nigeria.

Thus, there was need to evaluate the technology packages in terms of agricultural extension messages on improved cassava varieties by the public and private systems as represented by Rivers State ADP and SPDC agric services respectively based on content, communication method and farming systems. This was indeed the main objective of the study.

Methodology was participatory through interviews, Focused Group Discussion and questionnaires to semi-literate farmers. Data was obtained from both the service providers (extension agents) and clientele. It was difficult to isolate farmers based on sources of information. The public and private extension agencies targeted same farmers, a situation that created confusion in understanding, assimilation and adoption of technologies on improved cassava varieties. This confusion seemed to have caused moderate adoption while cultivation of local varieties

was still on the increase regardless the concerted efforts of public and private sector extension systems. Analysis was by simple descriptive statistics, t-test and correlation.

Results showed that farmers targeted by both public and private sectors were mostly illiterates on subsistence agriculture while cassava production was treated as “a woman crop”. The content of extension messages (technologies) was not concise but ambiguous; thereby leading to multiple interpretations. The public sector extension officers complained of no sustainable mobility which affected frequency of visits. Extension officers from both public and private sectors became complaisant and relied on each other to fill gaps of inefficiency. This confirmed the adage “goats owned by more than a person always die of starvation”. Farmers were left at the mercy of managing distorted information from extension officers. The private sector saw agricultural extension as Corporate Social Responsibility based on charity and not supported by any legislation or policy framework. It was adjudged as not having direct bearing to the upstream or downstream oil and gas sectors. Thus, agricultural extension service was down-played hence SPDC recently scrapped its agricultural services while TEPNG and NAOC are in dilemma of continued support to farmers.

It was recommended that legislative and policy framework enforcing private sector extension system be required to demonstrate political will to sustain agricultural development in Nigeria and by implication, an assurance for food security. Commercial farms headed by men should be involved to enhance commercial production of cassava in Nigeria. Federal government of Nigeria

should provide special incentive to encourage public and private sector extension services to sustain planned economic empowerment programme. Finally, as literacy level enhances assimilation of extension messages, special education should be organized for rural farmers as is the case with nomadic education to increase adoption rates.

Conclusively, significant relationship exists between understanding of extension packages (messages) by clientele and adoption of improved cassava varieties; hence the Federal Government of Nigeria will need to build this phenomenon into its transformation agenda for food security.

**Keywords:** Assimilation of Extension messages, Downstream and Upstream oil and gas sectors, Food security, Improved Cassava varieties, farming system.

### Acronyms

IITA	International Institute for Tropical Agriculture
ADP	Agricultural Development Programme
SPDC	Shell Petroleum Development Company Nigeria Limited
TEPNG	Total Exploration and Production Nigeria Limited
NAOC	Nigerian Agip Oil Company
LGA	Local Government Area
RSADP	Rivers State Agricultural Development Corporation
EDS	Extension Delivery System
CSR	Corporate Social Responsibility
PPP	Public Private Partnership
T & V	Training and Visit
FGD	Focused Group Discussion

## CHAPTER 1: 1.0 INTRODUCTION

Nigerian economy is presently dependent on oil and gas a situation that worries every government that means well for its citizenry. The lucrative nature and world energy requirements had placed serious advantage on people that do business in the oil and gas domain. This phenomenon had compounded the need for rapid agricultural development in the most populous country in Africa. The teeming population which is presently estimated at 167 million people certainly would place additional pressure on food availability and affordability in Nigeria.

International organizations like IITA had not relented in churning out improved varieties of cassava to meet ever growing demand for cassava products as that are

Nigerians' most populous staple food - Garri, Fufu, Amala, among others. Nweke (2003) {1} and Manyong et al (2005) {2} had recorded that cassava is a major crop widely cultivated in Nigeria in terms of area planted and total numbers of farmers involved as almost every household grows cassava which serves both for food and source of income.

Highlighting the importance of cassava to Nigerian economic development aspiration, IFAD/FAO (2005) {3} reiterated that Nigeria remains the world leader in cassava production since 1990. A study by Nweke and Manyong (2000) {4} revealed that cassava farming has been transformed from source of stable food to include income generation. Presently, Nigerian government had planned export promotion or cassava to China, a situation that will continue to put pressure on still subsistent production of cassava. Investigative studies had been carried out to determine factors that could affect adoption of improved cassava varieties but none had considered indepthly the extension delivery system as practiced by the public and Oil and Gas industries (Private sector) participation in the Niger Delta where oil politics activities down play agricultural activities and discourage

The public sector extension system in Nigeria is driven by the ADPs under the Ministry of Agriculture with basic fundamental problems that are not the purpose of this research.

On the other hand, some private sector like the Shell Petroleum Development Company and Total Exploration and production also embark on agricultural extension services scheme. The latter treats agricultural development in Nigeria as Corporate Social Responsibility that lacks legislative backing.

According to Jibowo (2000) {5}, glaring differences that exist in the standard and levels of living of agricultural and industrial countries can only be explained by differences in systems of agriculture. However, agricultural technologies in Nigeria are disseminated to end users (the farmers) through extension services. The public sector extension agents and their private sector counterparts bombarded same farmers in with improved cassava varieties from the research institutes. The effectiveness of this marriage ordinarily would have been rewarding but the local varieties seem to have continued to gain ground.

It was imagined that the content and quality of extension messages on improved cassava varieties may not have been un-connected with the slow pace of adoption in Rivers State, Nigeria. Therefore, the main objective of this study was to x-ray the content,

communication method (style) and possibly farming systems that affected adoption of improved cassava varieties in Rivers State, Nigeria. Notwithstanding, extension delivery system had been pinpointed to affect adoption of improved cassava technology. It had been noticed that there are some constraints with the extension delivery strategy as the Unified Agricultural Extension System (UAES) which ensures a single line of command had not been fully implemented for logistics reasons. Human resources necessary to implement T & V extension management system has a poor target of 1:1,000 farmers which still could not be achieved. One of the reasons advanced for this was inadequate deployment for Research-Extension-Farmer-Linkage-System (REFILS) with necessary extension inputs like improved varieties and fertilizer – FAO, Corporate Documentary Depository (2012) {6}

## CHAPTER 2: 2.0 RESEARCH METHODOLOGY

It is apparently important to understand the methodology adopted not only for data collection but also for analytical techniques for this work.

### 2.1 Scope and sampling

#### 2.1.1 Scope

The scope of the study was cassava farmers in Rivers State of Nigeria. Administratively, the State was divided into 24 local government areas with three major ethnic groups of Ijaws, Ikwerres and Ogonis. The people are predominantly farmers and fishermen / women whose farming activities concentrate on major staple food crops like cassava, yam and plantain. It was difficult to identify farmers with a mono crop of cassava; instead they practice intercrops to cushion the effects of losses as a result of climate change effects. The cassava farmers in Ogoni land where The Shell Petroleum Development Company started its agricultural extension services was favoured in the scope of the study to represent the private sector while ADP represents the public sector.

#### 2.1.2 Sampling techniques

Two major sampling techniques were adopted namely; purposive and random sampling.

The Rivers State ADP and The Shell Petroleum Development Company were purposively chosen to

represent the public and private sector extension system respectively because of visible programmes advanced by these agencies.

The Rivers State ADP operated in all the LGAs in the state while SPDC operated within its oil and gas operational base.

A total of 10 communities were randomly selected from these areas namely (1) Umuechem (2) Igwuruta (3) Ndele (4) Elele-Alimini (5) Mogho (6) Bori (7) Afam (8) Obelle (9) Rumuekpe (10) Eneka

Additionally, 10 other communities were also randomly selected from the communities where SPDC operations were not prominent. This presumed that they were served by the ADP system. These included (1) Kwawa (2) Kaa (3) Kono (4) Beerri (5) Ayama (6) Okoroma (7) Izuoma (8) Obeama (9) Kom-kom (10) Egberu

There seem to be unwritten agreement between the ADP and SPDC as the areas fully served by SPDC extension service had little presence of the ADP system regardless their mandate to cover all communities in the Rivers State. This observation however helped in isolating farmers of each extension system for contact with less influence of the opposite system.

Eight farmers were randomly selected from each of the 20 chosen communities. Thus, a total of 160 farmers –respondents (80 each from areas served by private and public extension agencies).

Additionally, the extension agents (SPDC-5 and RSADP-10) who served the farmers were also chosen for the study.

### 2.2 Data Collection and Instrument

The data used for this study comprised mainly of primary data collected through pre-tested structured questionnaires. The questionnaires were administered through face-to-face interview techniques by two experienced field assistants that understood the culture and language of the respondents at every point in time. This method was obvious in view of perceived high level of illiteracy among farmers and visible absence of farm production records. However, the interaction was participatory which afforded the farmers rooms to make useful contributions and suggestions that guided recommendations in this study.

Table1. Percentage gender distribution of farmer respondents

Gender	ADP Farmers (n=74)	SPDC Farmers (n=78)	All farmers (N=152)
Males	75.7	61.5	66.5
Females	24.3	38.5	33.5
Total	100.0	100.0	100.0

Source: Field survey, 2010

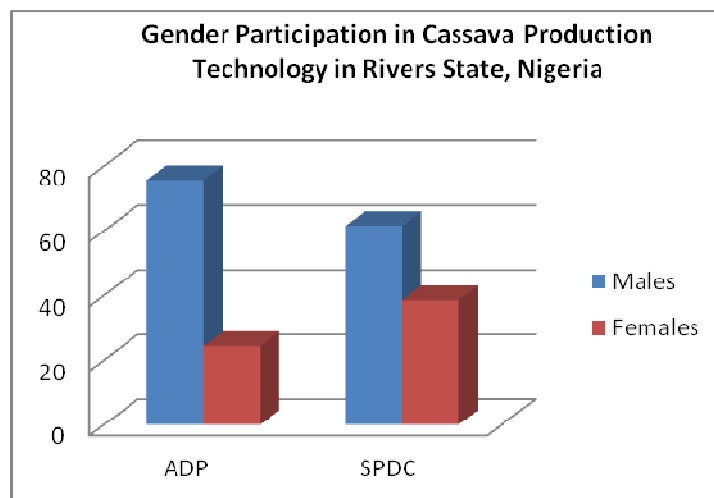


Fig 1. Public and Private Sector Extension Gender sensitivity measurement

The variables on which data were collected included demographic and socio-economic characteristics of farmers, farmers' adoption or otherwise of recommended cassava production techniques, extension messages (content, quality, frequency and timing) including associated constraints.

Focused Group Discussion (FGD) provided information that was used to confirm the authenticity of data from individual respondents. Difficulties were observed among farmers served by the private sector Extension system (SPDC) as the farmers felt not contented based on what according to them "volumes of oil and gas being taken away from their environment".

The public sector respondents were relatively calm but stressed that not much was expected from the government as it had become a tradition.

The research also used informal semi structured interviews. This was apparently to corroborate the deductions of the focused group discussions that already had corroborated the data from the questionnaire. Interactions were held with Extension officers of both the Public and the Private sector extension system.

Professional experience of the researcher in various capacities as Nigerian that lived in the rural communities and retiree of The Shell Petroleum Development Company was brought to bear in the study. Additionally, the researcher had been opportuned to visit other developing countries where poverty prevailed and food security was major issue, hence he expressed concern and needed to explore

ways to improving production of cassava in Nigeria so as to contribute to cushioning the effects of hunger in Nigeria.

### CHAPTER 3: 3.0 ANALYSIS AND RESULTS

As stated earlier, analysis was by simple descriptive statistics, t-test and correlation. Results were presented in tables to reveal frequency and percentages and also in graphs.

#### 3.1 DEMOGRAPHIC AND SOCIO-ECONOMIC CHARACTERISTICS

The responses of one hundred and fifty-two farmers (78 SPDC and 74 ADP contact farmers) were used in the analysis of the study.

##### 3.1.1 Gender

In Nigeria, cassava was considered a woman's crop, but majority of respondents in this study was males as shown in Table1 where 75.7% and 61.5% of males were for RSADP and SPDC respectively.

It could be due to the fact that in most communities, men are household heads and lay claim to their wives and daughters enterprises. A victim of our under-development you would say which a national tragedy is considering the United Nations agenda of gender equality. Another reason could be the land tenure system which in most communities does not attribute land ownership to women hence men claim ownership of enterprises on their "inheritable" land. Tragically, the females represented a quarter and one third farmers served by RSADP and SPDC respectively. This suggested that SPDC as a multinational (Private sector) made extra efforts to reaching the female farmers.

Level of Table 2. Percentage distribution of farmers by level of formal education

Educational level	ADP Farmers (n=74)	SPDC Farmers (n=78)	Farmers	All farmers (N=152)
No formal Education	0.0	15.4		7.9
Primary Education	37.8	47.4		42.8
Secondary Education	32.4	29.5		30.9
Post secondary Education (Diploma)	24.3	2.6		13.2
Post secondary education (Degree)	5.4	5.1		5.2
Total	99.9	99.9		100.0

Source: Field survey, 2010

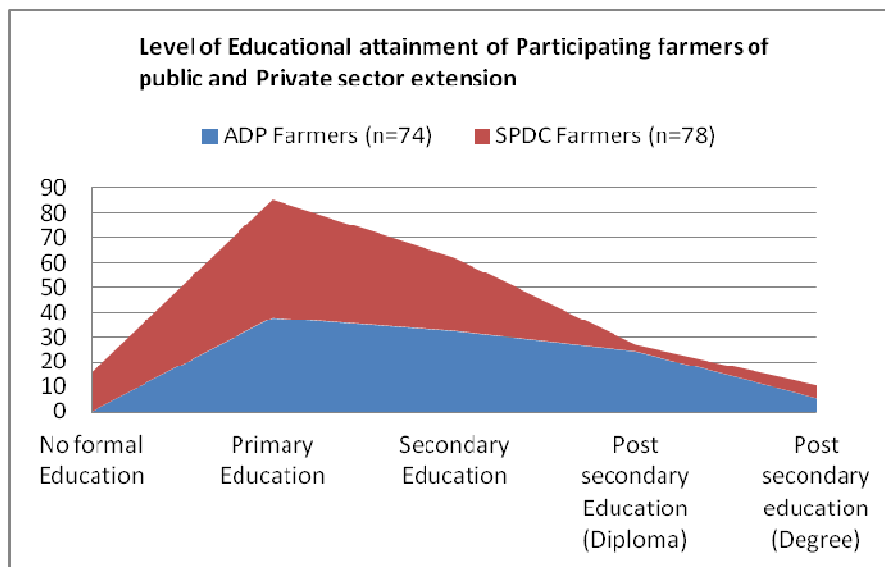


Fig 2. Clientele targets of Public and Private sector extension system in River State, Nigeria

Approximately, 15% of the farmers served by the private sector extension had not been to any formal school. About 38% of farmers served by the Public sector had a primary school education; suggesting that the private sector was more grass-root oriented (Table 2). Education may however have implications on understanding extension messages and by extension effect on adoption rate of improved cassava technologies. It could be seen to have direct effect on food security and could serve as a veritable tool in the transformation agenda of the Nigerian government. This is in conformity with the conclusions of Nweke, (2004) {7}, IITA, (2005) {8} and CBN, (2004) {9}.

### 3.2. Extension Messages (Technologies) to facilitate Adoption of Improved Cassava Varieties by the Public and Private Sector Extension System

The Technologies that the study considered for adoption to facilitate improved cassava production in Rivers State, Nigeria were (a) Cassava variety (b) Planting date (c) Spacing (d) Weed control method (e) Weeding interval (f) Fertilizer type (g) Fertilizer quantity and (h) Disease control

In Nigeria, the advocacy for cassava production starts from the preference of improved varieties to the local varieties which IITA over the years had played very vital roles. However, the adoption of these varieties among other variables depends on appropriate extension packages.

Table 3. Percentage Distribution of Farmers by Adoption of Some Recommended Cassava Production Technologies

Extension Technologies for Improved Cassava Production	ADP Farmers (n=74)	SPDC Farmers (n=78)	All Farmers (N=152)
Planting Date	74.3	91.0	82.7
Spacing	78.4	89.7	84.1
Weed Control Method & Intervals	100.0	100.0	100.0
Appropriate Fertilizer Type	75.7	69.2	72.5
Appropriate Fertilizer Quantity	37.8	26.9	32.4
Fertilizer Application Method	68.8	75.6	72.2
Disease Control Methods	24.4	30.2	27.3

Source: Field survey 2010

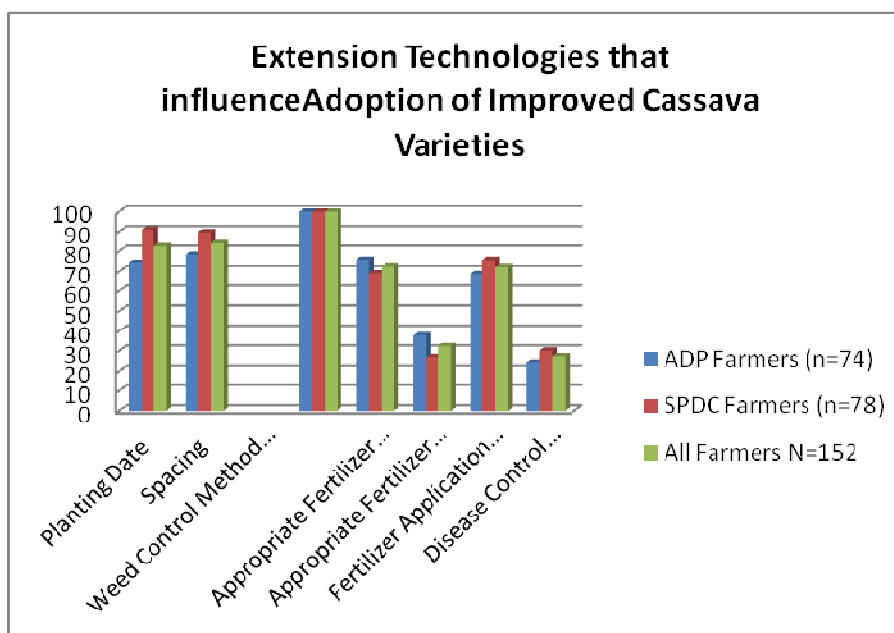


Fig 3: Extension Technologies influenced by skill and frequency of visits by extension officers

These packages in addition to the characteristics of the improved cassava varieties would largely depend on;

- (1) The skill (knowledge) of the Extension Officers and
- (2) The frequency of visits to the clientele's farms.

It would be deduced that skill of the extension officers of both private and public extension system is largely influenced by the knowledge on the subject matter and appropriate communication strategy.

Therefore, the two major extension variables considered in the study to influence adoption of

improved cassava varieties were restricted to those mentioned above. Attached correlation matrix showing the relationship between these 2 variables (Skill of the Extension Officer and Number or Frequency of visits to clientele's farm) among farmers served by the Public and Private sector extension demonstrated the influence of these variables on the adoption of improved cassava varieties in Rivers State in particular and Nigeria in general as shown in Tables 4 and 5. Therefore these variables were regarded as influential variables of Extension in the adoption of improved cassava varieties.

Table 4: Correlation Matrix showing Relationships Between Variables among farmers served by the Private sector Extension system (SPDC) in Nigeria

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	1.00																
2	** - 0.28	1.0 0															
3	- 0.14	*_ 0.2 3	1.00														
4	**0. 60	0.0 5	*_ 0.27	1.00													
5	0.19	- 0.0 6	- 0.10	**0. 42	1.00												
6	- 0.03	- 0.1 7	**0. 44	- 0.08	- 0.02	1.00											
7	- 0.19	** 0.4 3	*_ 0.23	**0. 38	**0. 35	- 0.13	1.0 0										
8	0.08	0.0 8	0.21	0.13	*0.2 3	0.17	0.0 3	1.0 0									
9	*0.2 3	**_ 0.3 5	- 0.04	*0.2 5	**0. 38	- 0.01	- 0.0 1	- 0.0 5	1.00								
10	0.06	0.0 7	- 0.07	0.11	0.13	- 0.11	0.0 7	*_ 0.2 4	- 0.08	1.0 0							
11	- 0.01	0.1 9	**_ 0.36	*0.2 5	0.10	*0.3 0	** 0.4 0	- 0.0 3	0.17	- 0.0 2	1.00						
12	- 0.14	0.0 9	- 0.21	0.02	- 0.03	*0.2 3	0.0 6	0.0 0	0.13	0.0 9	0.03	1.0 0					
13	0.20	0.1 0	0.05	0.00	* - 0.29	0.12	**_ 0.3 7	0.0 1	*_ 0.28	0.1 8	- 0.09	0.0 3	1.0 0				
14	0.14	0.1 6	- 0.07	**0. 34	- 0.09	- 0.13	0.1 1	- 0.0 9	0.17	**0 .34	*0.2 5	0.0 4	0.0 5	1. 00			
15	- 0.06	0.1 8	- 0.02	0.22	**0. 42	0.02	*0. 24	0.0 5	**0. 39	0.1 2	*0.2 9	0.0 3	- 0.0 8	0. 19	1. 00		
16	0.11	**_ 0.0 5	0.13	0 .05	*0.2 8	0.11	*0. 24	- 0.2 0	**0. 68	0.1 5	- 0.07	0.0 4	*_ 0.2 8	- 0. 01	*0 .2 3	1.00	
17	**0. 35	** 0.3 0	- 0.09	**0. 34	**0. 40	0.00	- 0.0 4	- 0.1 1	**0. 69	- 0.0 8	- 0.02	- 0.0 8	**0 .23	0. 09	0. 01	**0. 40	1. 00

\*shows coefficient is significant at P<=0.05

\*\* shows coefficient is significant at P <=0.10

**Variable definitions**

1.= Age, 2. = Gender, 3.= Educational level, 4.= Farming experience, 5. = Number of years as contact farmer, 6. = membership of co-operative group, 7.= Rank of cassava among crops grown, 8. = size of cassava farm, 9. Overall adoption,10. =number of extension visits 11.= skill of the extension officer, 12.= availability of planting material, 13. = availability of fertilizer, 14. = planting date, 15.= spacing, 16.= fertilizer type, 17.=fertilizer quality

Table 5: Correlation Matrix showing Relationships Between Variables among farmers served by the Public sector Extension system (Rivers State ADP) in Nigeria

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	1.00																
2	-0.12	1.00															
3	-0.08	*-0.26	1.00														
4	**0.60	-0.16	*-0.09	1.00													
5	**0.40	-0.05	**-.033	**0.43	1.00												
6	*0.24	-0.13	-0.01	**0.41	0.21	1.00											
7	0.02	-0.15	-0.02	0.04	0.10	0.02	1.00										
8	-0.01	-0.16	-0.07	0.17	-0.07	-0.07	0.03	1.00									
9	-0.15	-0.1	-0.02	-0.05	0.06	-0.04	-0.06	0.22	1.00								
10	-0.01	0.11	0.05	-0.13	-0.17	-0.22	0.02	*0.24	0.14	1.00							
11	-0.03	0.07	**0.30	-0.19	**0.31	-0.22	-0.03	-0.12	*-0.25	0.17	1.00						
12	0.15	0.03	0.02	0.11	0.03	-0.15	-0.15	0.07	0.07	0.05	0.23	1.00					
13	0.18	-0.17	-0.03	*0.25	0.13	**0.39	-0.14	-0.05	0.07	-0.16	-0.07	0.18	1.00				
14	0.15	0.12	-0.01	-0.08	-0.11	0.05	-0.04	0.14	**0.65	0.0	-0.08	0.04	0.08	1.00			
15	-0.10	0.07	-0.04	-0.13	-0.03	*0.25	0.16	*0.24	**0.57	0.19	0.11	-0.02	0.02	*0.59	1.00		
16	-0.06	0.03	-0.23	0.13	*0.24	0.05	-0.10	0.12	**0.64	0.12	**0.36	0.05	0.11	**0.32	*0.24	1.00	
17	0.05	0.08	**-.046	0.22	0.22	-0.12	0.02	**0.33	**0.45	0.11	-0.16	0.02	0.23	0.14	0.14	**0.44	1.00

\*shows coefficient is significant at  $P \leq 0.05$

\*\* shows coefficient is significant at  $P \leq 0.10$

#### Variable definitions

1.= Age, 2. = Gender, 3.= Educational level, 4.= Farming experience, 5. = Number of years as contact farmer, 6. = membership of co-operative group, 7.= Rank of cassava among crops grown, 8. = size of cassava farm, 9. Overall adoption,10. =number of extension visits 11.= skill of the extension officer, 12.= availability of planting material, 13. = availability of fertilizer, 14. = planting date, 15.= spacing, 16.= fertilizer type, 17.=fertilizer quality



It has to be placed on record that the prevailing farming system in the study area, Rivers State of Nigeria was small-holder and subsistence farming. This group of people actually produces most of the bulk food consumed in Nigeria. This could provide an insight to the clamour for food security in Nigeria not only to provide employment for the teeming population especially, the youths but also to keep faith with one of Maslow's basic requirements – "food". The rising wave of crime in the country may not be unconnected with this phenomenon. This thought was not part of the scope of this work; hence it would be x-rayed in subsequent study.

The relationship between variables and its effects on the overall adoption of improved cassava varieties considering the public and private sector extension system was tested using the Pearson correlation analysis as shown in tables 4 and 5 above.

As stated earlier, the study considered only variables that affected extension delivery system - Skills of extension officers (variable 11) and Number (Frequency) of visits made to the clientele's farms (variable 10) and by implication, extension messages that were communicated during the said visits. For instance, planting cassava at the right time ensures good takeoff and growth. Correlation results among the Private sector extension assisted farmers showed that the adoption of the recommended technology was significantly influenced by the farming experience of the farmer ( $r=0.34$ ), and the skill of the extension officer in effective communication with the farmers ( $r=0.25$ )

This implies that an increase in each variable encourages adoption of the said technology on improved cassava that triggered possible increase in yield and income (*ceteris paribus*). Conversely, the adoption of the said technology was not significant with the Public sector extension system.

However, when the component technologies were pooled as overall adoption, a significant positive relationship ( $r=0.65$ ) was indicated by the public sector. This suggested that adoption of the recommended technology was highly influenced by the adoption of the other component technologies. Therefore, the extension messages of the private sector were derived mostly from the component technologies while that of the public sector was a function of pooled component technologies. This tends to agree with the conclusions of Kavia, Mushongi and Sonda (2007) {10} that information (technology package) was significant and positively associated with the adoption of improved cassava varieties.

This paper focused on demonstrable skill of both the Public and Private sectors extension systems in

Nigeria that had the potentials of influencing adoption of cassava technology and the willingness and frequency of visits to clientele's farms to avoid what I called

"desk-top" extension delivery system that had contributed to food insecurity in Nigeria.

Institutional readiness to support efficient extension delivery was also an aspect covered by the Focused Group Discussion (FGD) in the study.

The study showed that most variables such as planting date, farming experience, membership of co-operative societies, spacing, and number of years as contact farmer were significantly related to perceived skill of the Extension officer.

The import of this could mean, given the necessary tools, the skill of extension officer which communication is dominant would be highly influential in the adoption of improved cassava varieties; provided unambiguous extension messages were derived from these influential variables.

It was also revealed in the FGD that Extension officer's skill which is a function of knowledge on the subject matter and an index of ability to transfer technology (communication) stimulated interest towards visiting farmers' plots which in most cases attracted on-farm trainings.

However, the effectiveness of the Public and Private sector Extension system in line with Skill of Extension Officers and Frequency of visits to farmers' plots could be deduced from perceived constraints as enumerated below.

### **3.3 CONSTRAINTS FACED BY EXTENSION OFFICERS OF THE PRIVATE AND PUBLIC SECTOR EXTENSION SYSTEM IN NIGERIA**

According to Asiabaka and Bamisile (1992) {11}, in any extension system, it is the extension agents that maintain a direct contact with farmers. This is the case with the public and private sector extension.

However, in the course of their work, the extension agents encountered some constraints which they noted had serious implications on the delivery of their mandates.

The major constraints identified were, (a) Late delivery of farm inputs when available (b) Inadequate transport facilities (c) Inadequate training for field extension staff (d) Lack of clarity of available technology packages especially for improved cassava varieties (e) Inadequate incentives (f) Poor extension officer-farmers ratio in the face of growing population and where everyone acclaims to be a farmer (political farmers indeed) (g) Lack of office and field facilities

The mean rating of extension agents on the above constraints are presented in the table 6;

Table 6: Constraints as perceived by Extension Agents

S/No	Constraint	Mean rating by Private Extension system	Mean rating by Public Extension system	Total
1	Late delivery of farm inputs when available	1	3	4
2	Inadequate transport facilities	6	1	7
3	Inadequate training for field extension staff	3	7	10
4	Lack of clarity of available technology packages especially for improved cassava varieties	2	6	8
5	Inadequate incentives	5	2	7
6	Poor extension officers farmers ratio in the face of growing population and where everyone acclaims to be a farmer (political farmers indeed)	4	5	9
7	Lack of office and field facilities	7	4	11

Source: Field survey, 2010

This study presumed and correctly too, that constraints that affected performance of either Public and Private sector extension officers, affected directly or indirectly the extension messages delivery on improved cassava technologies / adoption.

Thus, late delivery of farm inputs was rated the most important constraint by the Private sector extension system. They explained that the farmers input demands were channeled by them to their supervisors. The subsequent supply of the inputs for farmers took relatively longer time that caused credibility problems for the extension officers. The extension officers of the Public sector were not directly involved in input supplies to their farmers; hence this variable was rated third.

Experience had demonstrated that Extension officers used input supplies especially fertilizers as tonic to stimulate adoption. This argument is supported by Asiabaka and Bamisile (1992) {12} that inputs make farmers cautious about adopting improved technologies.

Lack of transport facilities was a crucial problem in the Public sector extension system. Sustained transport facility is important for extension officers to keep appointment with their client population. The Private sector extension provided vehicles to facilitate farmers outreach while the Public sector had limited access. Those with motorcycles complained of poor maintenance. This phenomenon had adverse implications on the effectiveness of the extension officers as supported by Fortman(1984) {13},

Mijindadi, (1985) {14} and Asiabaka and Bamisile (1992) {15}.

It had been noted by Asiabaka and Bamisile that incentives motivate extension officers to be committed to their jobs. The Public sector extension officers rated lack of incentives fifth due to job insecurity as a result of been employed as contract staff (considered as discrimination) as their colleagues in the core business were employed as direct staff. However, the Public sector extension ranked it second as they complained of lack of regular promotions and poor salaries. The implication of the foregoing therefore was that extension officers of both Public and Private Extension systems needed motivations towards increased performance.

Extension system, be it Public or Private is relevant to the extent it meets the demands of its clientele. To be relevant, extension officers should develop extension messages (also in local dialects) to market available technologies to the rural farmers.

This was regarded as major constraint in the Private sector system as it was rated second. It could mean that there was weak linkage with research institutes and the universities because it falls outside the core mandate of the organizations which considered agricultural extension as corporate social responsibility (CSR).

However, the Public sector ranked it sixth which suggested that it was not a major problem. This may not be unconnected with the Training and Visit (T & V) system that according to Pickering(1987) {16} that requires good linkage with the research institutes.

Extension Training is an important feature of the T & V system which ensures that officers' knowledge were regularly updated technically as well as on methodology of message delivery. This could account for why the inadequacy of training for field extension work was rated 7 by the Public sector extension officers. The Private sector extension officers, though academically qualified were not sufficiently prepared for field extension work as shown by their rating on the subject matter (Table 6) Could this phenomenon have negative implication on quality and delivery system of technological messages? It is outside the scope of this study.

The large size of the farming population in relation to the number of extension agents had been identified as a major constraint to the performance of extension officers (Ijere and Idachaba (1983) {17}, Okoye (1988) {18}, Emah (1992) {19} and Asiabaka and Bamisile (1992) {20}. The table showed that inadequate number of field staff was almost rated same by extension officers of both Public and Private sectors extension system. The implication of this constraint would be more adverse where extension officers do not have sustained means of transport towards reaching their clients or were ill-prepared due to inadequate trainings. These identified constraints may have had effect on quality of extension messages and delivery method hence planting of local varieties is still invoked in Rivers State communities of Nigeria.

#### **CHAPTER 4: 4.0 SUMMARY, RECOMMENDATIONS AND CONCLUSION**

##### **4.1 SUMMARY**

Analysis of the Extension messages towards the adoption of improved cassava varieties had demonstrated that skill of extension officers and frequency of visits to farmers' plots had significant influence on other component technologies.

Summarily, the problems associated with increasing demand for cassava tubers in Nigeria based on competition that was triggered by domestic and industrial needs could be addressed if Extension systems - Public and Private sectors are focused and strengthened. The researcher thinks that the only way to achieve such proposed synergy is through cross-pollination of the strengths and weaknesses of the two systems in a manner that are complimentary. This approach therefore will demonstrate that the strength of achieving food security in Nigeria lies on co-operation (complimenting) instead of competition between the private and public sector extension system.

##### **4.1.1 PERCEIVED STRENGTHS OF PUBLIC SECTOR EXTENSION ON IMPROVED CASSAVA PRODUCTION TECHNOLOGY**

The Public sector extension in Nigeria, the ADPs that are the product of Federal Ministry of Agriculture had spread to the 36 states including Abuja. The Training and Visit system continue to be the basic concept of the public extension system.

The perceived strength from analysis of the FGD information was dependent on support by government policies.

Budgetary allocation and access to inputs were identified as high points upon which public sector extension can lean on and massively cascade to farmers, technologies that would trigger massive production of cassava to meet domestic needs and the recently added industrial needs.

##### **4.1.2 PERCEIVED LOWLIGHTS OF PUBLIC SECTOR EXTENSION ON IMPROVED CASSAVA PRODUCTION TECHNOLOGY**

The Public sector extension system suffers lack of goodwill from the government that established it. ADPs extension Staff were neither trained nor motivated. Mobility to facilitate field visits was scarcely available therefore extension officers that were expected to be out there in the field interacting with farmers would sit back in their offices to implement "desk-top extension practice". There is serious disconnect between extension officers and the research institutes or the universities with the mandate to churn out innovations that would encourage cassava production in Nigeria.

The consequence of this was insufficient extension messages to encourage cassava farmers. Co-operative farming system that encourages commercialization had not been fully explored, rather the individual subsistent farmer continued to take the lead. Farm inputs that serve as carrot to cassava farmers had been kept distant from extension officers. This situation had sometimes exposed the extension officers as pretended dupers and unserious fellows.

##### **4.1.3 PERCEIVED STRENGTHS OF PRIVATE SECTOR EXTENSION SYSTEM ON IMPROVED CASSAVA PRODUCTION TECHNOLOGY.**

Inputs like fertilizers and planting materials were readily available. Extension staff were few but competent. However, there were frequent trainings and workshops aimed at improving the competences of the private sector extension officers. This was not the case with the public sector.

Due to high level of motivation, the output of the private sector extension officers in Nigeria, outweighed that of their counterparts in the public sector.

Reliable means of transportation were arranged for the extension officers and they seem to have religiously attempted to keep appointments with farmers. A factor the farmers confessed distinguished them from the public sector extension. It was also acknowledged that they were more persuasive as demonstrated by differential adoption rates of improved cassava varieties by farmers served by the public and private sector extension services (Tables 4 & 5).

#### **4.1.4 PERCEIVED LOWLIGHTS OF PRIVATE SECTOR EXTENSION IN IMPROVED CASSAVA PRODUCTION TECHNOLOGY**

The private sector extension system operates in the form of corporate social responsibilities (CSR). There was no legislation backing its establishment, rather services were seen as assistance to the people. It falls outside the corporate mandate of the organizations that support its existence. For instance, the multinationals explore and produce oil and gas. Its involvement in agricultural extension services delivery is away from its original mandate hence agriculture was bound to receive less attention in terms of priority.

To this effect, late delivery of inputs to farmers was a constraint. The administrative protocol takes farmers' requests for inputs to the supervisors who approve and returns before delivery was made. It resulted to farmers planting late and losing confidence in the officers.

Similarly, there was a weak link between extension officers and the research institutes because it was perceived that technologies were not clearly understood. Thus there was need for extension trainings to update the private sector extension system. These trainings were lowly encouraged since they had nothing to do with oil and gas production.

#### **4.2 RECOMMENDATIONS**

Public-Private Partnership (PPP) model of Extension Delivery is strongly recommended. In view of the enumerated constraints of the Public and Private sectors extension systems especially in the adoption of improved cassava varieties, the study recommended a combination of Public and Private Extension delivery system. Thus, adoption of improved cassava technologies requires that extension officers of the public and private sectors would need to synergize and develop acceptable strategies and messages to address different rural stakeholders towards accelerated adoption of improved cassava technology. One element that would impose threat is absence of organised platform for its take off. Would the Public sector that parades the legislative instruments be willing to cow the private sector that considers Extension a social

responsibility to brace-up with programmes that would compliment shortfalls in the public sector?

Similarly, the Private sector would be skeptical in full involvement in this regard apparently because of the bureaucratic administrative structures that presently slow down delivery in the public service in Nigeria. Be it as it may, PPP still remains a better alternative Extension model in the adoption of improved cassava production technology in Nigeria.

Nigerian youths should be motivated through incentives to be involved in extension delivery so that they can develop extension messages that suit current realities with creative styles instead of relying on orthodox methods.

Trainings for Extension Officers should be rekindled to address identified gaps militating against innovative technology transfers on improved cassava varieties.

Extension messages must be taken to the farmers. Therefore, sustainable transport scheme to ensure mobility of Extension Officers is inevitable, if extension delivery would be practiced in the field; otherwise Extension officers would be simulating farms at the comfort of their various offices.

There should be general overhaul of the Public sector extension system to reduce the bureaucratic bottlenecks that are the characteristics of civil service in Nigeria.

In the PPP arrangement advocated, a departure for creative extension messages should be created to enhance adoption of technologies.

Finally, Extension Delivery System (EDS) should be made a major component in the agenda of the Federal Government in which case the Farmer-Led-Extension system should be practiced to address shortfalls in the number of available skilled Extension Officers.

#### **4.3 CONCLUSION**

Unfortunately, the Private sector extension service in Nigeria is gradually getting extinct without the knowledge of the Federal government. Though the transformation agenda have been outlined attractive programmes to meet the requirements for food security, unfortunately these programmes have not consciously considered the place of extension programme delivery, communication, administration and rural community dynamics. Instead of holistic system, a segregative approach are being emphasized which for all intense and purposes would not sustainably address the problems of food security in Nigeria.

To compound the fears of food security in Nigeria, the population had been growing geometrically and consequently, the demand for most staple food, cassava and its by-products. The local demands are scarcely met yet advocacy for industrial demand for cassava tubers had been at the increase. A ban had been placed on importation of wheat flour for baking of bread. Bakers have now been advised to compute their formulation by substituting a reasonable percentage with cassava flour. This sounds logical and interesting at least to diversify Nigerian economy that is hitherto dependent on oil and gas; however, had anybody in the Public sector bothered about the sustainability of value chain agriculture in Nigeria?

What percentage of Nigerian farmers are cultivating improved cassava varieties, total yield and available extension services within comfortable ratio to meet farmers' needs to boost production? Is there a possibility of all agencies providing extension services to synergize and pool resources for mass adoption of improved cassava production technologies to meet demands? These and more questions need answers otherwise the efforts to address food security would tantamount to "Political Talks" that were meant to provide first-aid to terminal diseases.

The increasing demand for cassava and its byproducts for domestic and industrial purposes would be hampered if sustainable Extension Services delivery is not built into the production equation. It was obvious that neither the Public sector nor the Private sector (without legislative backup) could withstand the tidal wave of events of needed extension delivery.

Therefore, the marriage of the Public and the Private Extension systems under the Public Private Partnership (PPP) initiative would advance the magic in winning the fight against food insecurity in Nigeria. This could be based on the premix that each would play complimentary role to the other especially after Private Extension systems in Nigeria must have been backed by some legislation in order to cement their modus operandi.

Conclusively, agricultural extension could play a vital role in the transformation agenda of Nigerian government, apparently because transfers of innovative technologies would largely depend on the willingness of Extension officers to invade Nigerian rural communities (that produce bulk of the food consumed by the entire populace) with unambiguous but convincing extension messages of a particular technology and the time to activate that is **NOW**.

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