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Extension Implications of Skill Gaps among Cassava Farmers in the Niger Delta Region of Nigeria

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Abstract

The study evaluated the skill gap among cassava farmers in the Niger Delta region of Nigeria. A multi-stage sampling technique was used to obtain data from 270 farmers using structured questionnaire and interview schedule. Data collected were analysed using frequency counts, percentages, mean score, Chi square and Pearson product moment correlation. There were more male (55.9%) cassava farmers in the study area with farmer's mean age approximately 48 years and majority (75.2%) were educated. Mean farming experience was 24 years and mean farm size was1.8 hectares. Skill gap analysis indicated 16 areas including packaging of cassava products with mean weighted discrepancy score (MWDS) = 7.61), soil management strategies (MWDS = 6.70) and chemical application (MWDS =3.93) among others. There was a significant relationship between training needs and marital status (χ^2 = 18.46, $p < 0.05$) and the variety of cassava planted (χ^2= 6.397, $p < 0.05$). Age (r = 0.181), farm experience (r = 0.199) and household size (r = 0.125) had significant relationship with farmers training needs. The study concluded that there are obvious skill and competency gaps among cassava farmers in the region. It recommended that for improved productivity, farmers' training should concentrate on the critically expressed areas of skill and competency gaps and that periodic training needs assessment be done to ensure that efforts and training resources are appropriately channeled.

Keywords: Skill-gap in Cassava Farmers, Cassava in Niger-Delta

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Introduction

Cassava is grown for use as food in many African countries including Nigeria. According to Cock, (1985) in Oyegbami *et.al.*, (2010) it is a high yielding and drought resistant crop and with improved pest management practices, its high yielding capacity could be sustained. Current production figures show that Nigeria is the largest producer of cassava with other top producers being Indonesia, Thailand, Democratic Republic of Congo. It produced an estimated output of 54 million metric tons in cultivated land area of 3,850,000 hectares in 2012 (FAOStat, 2013)

Cassava has been noted as one produce in the agricultural sector that can be a major foreign exchange earner and impact positively on the economic fortune, yet all cassava produced in Nigeria are consumed domestically (Oyebanji and Akwashiki, 2003). It is this understanding that propelled the Federal government of Nigeria to launch several initiatives with the goal of making cassava an economic crop. In spite of the availability of abundant land and human resources in Nigeria, cassava farmers generally are confronted with a lot of challenges especially in the Niger Delta region of Nigeria (Anyanwu and Iyagba, 2012), with yield per hectare on the decline over the years (RMRDC, 2004). Achoja *et. al.,* (2012), report that cassava output in some parts of the Niger Delta increased but very slowly and this according to them could be as a result of lack of optimum use of land, lack of awareness of opportunities and low contact with extension. Similarly, Yuguda *et.al.,* (2013) identified a wide range of technical, institutional and socioeconomic factors such as inadequate pest and disease management, agronomic problems and lack of knowledge on certain practices as constraints to cassava production. This situation cannot guarantee increased production in light of the new government initiative of making cassava an export crop. Thus, if the conditions persist without appropriate measures to check the trend, the Federal government's initiative may not achieve its goal. It is important to state that increase in productivity does not happen in isolation, farmers must have the requisite knowledge, skill and abilities that are applicable to current farm challenges and situations. Where there are skill gaps, productivity and national output are affected. Gap analysis involves the

assessment of what the learner needs in order to accomplish or get the desired result. According to Wentling (1992), skill gap analysis is a process of determining the training needs of individual employees in relations to the important tasks or steps or components of tasks identified for training. The method determines how skilled or proficient individual employees are on these tasks. Considering the important relationship between productivity and competence, it becomes

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imperative therefore to assess the skill and knowledge gap of cassava farmers with the intent of identifying appropriate training interventions to enhance cassava output in the Niger Delta region. The pertinent questions therefore are (1) what cassava production training have respondents attended and how where the trainings delivered? (2) What are the skill gaps among respondents in cassava production?

Objectives of the Study.

The general objective of the study was to assess the skill and knowledge gap of cassava farmers in the Niger Delta region of Nigeria.
The specific objectives of the study were to:

1. Identify previous cassava production trainings attended by cassava farmers;
2. examine the methods of training;
3. determine the skill gap among respondents; and
4. prioritize their training needs.

Hypothesis

H01: There is no significant relationship between selected farmers' socioeconomic characteristics and their training needs.

Methodology

The study was conducted in the Niger Delta region situated in the South-South zone of Nigeria. The region is bordered in the South by the Atlantic Ocean, to the East; by the Republic of Cameroon, to the West by Osun and Ogun States and to the North by Ekiti, Kogi, Anambra and Ebonyi States. The region is made up of nine states which include Abia, Akwa-Ibom, Bayelsa, Cross River, Delta, Edo, Imo, Ondo and Rivers. It lies between latitudes $4^{o}10'$ and $7^{o}30'$ North and longitudes $4^{o}30'$ and $9^{o}45'$ East. Agriculture is the dominant economic activity in the area with

crop farming and fishing activities accounting for 80% of all forms of agricultural activities. The region falls within the tropical rain forest zone with high rainfall and thick vegetation cover. Some of the arable crops produced by the farmers include cassava, yam, cocoyam, maize and rice. The study population comprised of all cassava farmers in the study area. The list of these farmers which constitute the

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sampling frame were obtained from the Agricultural Development Programme (ADP) Offices and the various states and local government offices of the Ministry of Agriculture and Natural Resources. A multi-stage sampling procedure was used for the study. In the first stage, three States (Delta, Edo and Ondo) were purposively selected from the nine states in the region because they are the first with high cassava production in the region. From the number of local government areas(LGAs) in each state, Ondo (18 LGAs), Delta (25 LGAs) and Edo (18 LGAs). Twenty-five percent were proportionately selected based on the intensity of cassava farming. This resulted to a total of 16 LGAs for the study. A random selection of five (5) communities (towns) each from the selected 16 LGAs was done. From the 80 communities**,** another random selection of 4 respondents from each of the communities was carried out. On the whole, a total of 320 respondents were used for the study out of which 270 had completed information deemed suitable for analysis.

Measurement of Variables.

Skill gap (training need) was the dependent variable of the study. For this study, the skill-gap analysis as described by Wentling (1992) was used to ascertain farmer's skill gap. From a list of selected and relevant competencies in cassava production activities, farmers were asked to state their perceived levels of competence and importance attached to these activities and was computed using a 5 point Likert-type scale. Competence was assessed on a scale of very high competence = 5, high competence =4, Average competent= 3, little competence = 2, not competent at all = 1. To identify the importance attached to these activities, another 5 point Likert-type scale with scale very high importance, high Importance, average important, little importance and not important at all with scores 5, 4, 3, 2 and 1 respectively was used to compute the perceived levels of importance placed on each of the listed activities (Solomon, 2008). An overall mean score was then calculated for competence and importance for all items on the schedule. From the results, the skill gap of respondents was identified using the Borich Model (Borich, 1980). According to Borich model, skill gap is computed by finding the Mean Weighted Discrepancy Scores (MWDS) of perceived importance and competence and multiplying each discrepancy with the mean importance rating. The competencies are then ranked on the basis of the weighted scores. The greater or

higher the difference, the higher the need for extension education or training (Abdel-Maksoud, 2010). For the purpose of this study, a threshold of two thirds of MWDS as used by Omotesho *et al.,* (2012) was used to determine and establish the training needs of respondents. Thus a variable with MWDS of less than two thirds of the entire respondents' mean would not require training. To obtain data on

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previous trainings attended, respondents were asked to indicate 'Yes' or 'No' using selected specific types of cassava production themes and how the trainings (method) were carried out in 2014 – 2016. This period was used as baseline based on the fact that trainings attended during this period could still be relevant and fresh to apply by farmers. The results were presented in frequency and percentage. The study used both descriptive and inferential statistical tools such as standard deviation and inferential statistics include Chi-square and Pearson Product Moment Correlation analysis.

Results and Discussion

Socio-economic Characteristics of Respondents.

Table 1 shows that 55.9% of the respondents were male. This shows that there are more male cassava farmers in the study area. Only 24.8% of respondents had no form of education at all. Mean farming experience was approximately 24 years with 77.0% of respondents having farm less than 2 hectares and 23.0% had farms 2 – 5 hectares. The mean farm size was 1.8 hectares. Improved varieties of cassava cuttings were predominantly planted (84.1%). Respondents that planted local varieties were 5.6% and 10.4% planted both local and improved varieties.

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Table 1: Distribution of farmer's according to their socioeconomic characteristics

Variable	Percentage (n=270)	Mean
Sex		
Male	55.9	
Female	44.1	
Marital Status		
Single	10.4	
Married	83.7	
Divorced	7.0	
Separated	2.2	
Widowed	3.0	
Age		
30 and less	5.2	
31 – 50	47.8	**48.4**
>50	47.0	
Religion		
Christian	73.3	
Muslim	25.9	
Traditionalist	7.0	
Level of Education		
No formal education	24.8	
Attended Primary School	16.3	
Completed Primary School	25.6	
Attended Secondary School	8.5	
Completed Secondary School	11.9	
Attended Tertiary School	13.0	
Household size		
0 – 3	30	
4 – 7	62.96	**4.4**
>7	7.04	
Variety Planted		
Improved	84.1	
Local	5.6	
Both	10.4	
Farming Experience		
1 – 10	12.2	
11 – 20	37.0	
21 – 30	20.0	**23.6**
31 – 40	18.9	
>40	11.9	
Farm Size		
Less than 2 ha	77.0	
2 – 5 ha	23.0	**1.8**

Source: *Field Survey, 2016.*

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Cassava Trainings Attended/Methods of Training

Table 2 shows that trainings on cassava processing and value addition (51.5%) and pest and disease control (50.4%) were the most attended. Most of the respondents (84.9%) indicated that they were trained in a seminar for cassava processing and another (46.3%) attended lecture presentation on pest and disease control. The current interest placed on processing and value addition must have necessitated the comparatively high number of participation in the seminar. Besides, proficiency in processing will reduce losses due to spoilage and could enhance household food security. With this, it is expected that the competency of respondents on cassava processing and pest/disease control will be high. The results also revealed that 40.4% of farmers attended training on cassava rapid multiplication techniques and another 35.2% on chemical and fertilizer application. Other trainings attended were on record keeping and farm business management (27.4%), cassava product standard, marketing and processing for export (8.5%) and risk and uncertainties in agriculture (1.1%). Farmers did not receive any training on farm survey and layout techniques, intercropping patterns and mechanization opportunities. Seminar and workshop were the most common methods of training with trainings by friends relatively used. It could be inferred that the level of trainings attended by farmers were quite low. .To increase the capacity of farmers for improved production, training and re-training on diverse aspect of cassava value chain is important.

This result agrees with the findings of Kagbu and Issa (2015) in their work on agricultural business cooperatives in Oyo state, Nigeria where they reported that training on cassava value addition was the highest attended by respondents.

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Table 2: Training attended and method of training.

Types of Training	Attendance		Method of Training (%)						
	%	Rank	Seminar	Workshop	Lecture	Group Discussion	Friends	Video	Field Trip
Cassava processing and value adding techniques	51.5	1	84.9	3.6	5.8	1.4	4.3	–	–
Pest and disease control	50.4	2	10.3	–	46.3	4.4	30.1	–	–
Cassava rapid stem multiplication	40.4	3	46.8	48.6	–	1.8	–	–	–
Chemical and fertilizer application method	35.2	4	5.3	41.1	–	7.4	46.3	–	–
Record keeping and cassava farm business management	27.4	5	28.4	71.6	–	–	–	–	–
Cassava product standard, marketing and processing for export	8.5	6	100.0	–	–	–	–	–	–
Risk and uncertainties in cassava production	1.1	7	–	–	–	–	–	100.0	–

Source: *Field Survey, 2016*

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Skill Gap of Farmers

The results of the skill gap analysis of cassava farmers using mean weighted discrepancy score (MWDS) and their ranking are presented in Table 3. A two thirds of mean weight ($\bar{x}$ = 2.29) discrepancy score was adopted for the establishment of respondents training needs Based on this, out of twenty four (24) production activities, the analysis revealed that respondents will require trainings in sixteen (16) areas having shown skill gaps. The topmost areas of training needs were in packaging of cassava products (MWDS = 7.61), soil management strategies (MWDS = 6.70), handling of cassava chip machine (MWDS = 6.49), making of pellets (MWDS = 6.33) and cassava flour (MWDS = 6.11). Respondents' high need of training in packaging of cassava products, handling of chip machine and the making of pellets and flour could be as result of the new interest in processing cassava products and the need for improvement of cassava quality both for local consumption and possibly for export. When farmers are skilled in processing, it will diversify their production capacity and income. However, packaging of processed products could be a major limitation if not properly done, hence the high need for training. Training on handling chip machine, making of pellet and cassava flour could also be linked to the need to gain expertise in cassava product making, packaging and marketing. Management of soil is a basic requirement for cassava farming. Soil parameters such as nutrient status or fertility, soil type, soil preservation, tillage, drainage, acidity and alkalinity are important elements that farmers need to educated on. It is a critical need hence it was expressed as a skill gap

Similarly, training needs in cassava rapid multiplication techniques (MWDS = 5.18), record keeping (MWDS = 4.73), making of chips (MWDS = 4 .42) and tapioca (MWDS = 4.02). Record keeping is a very crucial part of successful agricultural venture as it enables farmers to keep track of the performance of their farm venture. Other areas of training needs were in chemical application (MWDS = 3.93), pest identification and control (MWDS = 3.83), marketing of cassava products (MWDS = 3.82), reading of cassava leaflets/information (MWDS = 3.22), disease identification and control (MWDS = 3.17), processing technique (MWDS = 2.67), preparation and handling of cuttings (MWDS = 2.39). Managing profitable farm enterprise will require that farmers are able to identify the pest and diseases that attack their crops and also have thorough knowledge on the specific and required chemicals for control.

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Table 3: Skill gap of cassava farmers

Cassava Production Activities		Mean $\bar{x}$			
		Importance	S.D.	Competence	S.D
	MWDS				
Packaging of cassava products	7.61*	4.04	0.97	2.16	1.04
Soil management strategies	6.70*	3.99	0.98	2.32	1.12
Handling of cassava chip machine	6.49*	3.84	0.90	2.16	1.05
Making of pellets	6.33*	3.83	0.98	2.17	1.13
Making of cassava flour	6.11*	3.61	1.07	1.91	1.08
Cassava stem rapid multiplication technique	5.18*	3.85	0.93	2.51	1.21
Record keeping	4.73*	4.00	0.85	2.81	1.08
Making of chips	4.42*	2.65	0.83	2.44	1.15
Making of tapioca	4.02*	3.81	0.88	2.75	1.51
Chemical application techniques	3.93*	3.98	0.81	3.00	1.07
Pest identification/control	3.83*	4.13	0.74	3.20	0.94
Marketing of cassava/products	2.82*	4.08	0.79	3.15	0.82
Reading of cassava/ agricultural information leaflets	3.22*	3.76	0.91	2.90	1.31
Disease identification/control	3.17*	3.98	0.71	3.18	0.93
Processing techniques	2.67*	3.50	0.82	4.14	0.70
Preparation/Handling of cuttings	2.39*	4.35	0.60	3.80	0.63
Fertilizer/Organic manure application	1.89	3.99	0.82	3.51	0.76
Identification of healthy cassava stem cuttings	1.79	4.32	0.58	3.90	0.35
Identification of improved varieties	1.44	4.37	0.60	4.04	0.70
Cassava planting space	1.06	4.25	0.60	4.01	0.75
Selection of site	0.81	4.40	0.56	4.21	0.57
Intercropping pattern	0.64	3.76	0.97	3.59	0.96
Orientation of planting materials	0.22	3.96	0.90	3.90	0.48
Planting depth	0.09	4.03	0.71	4.01	0.64

- Need training (score ≥ 2.29)

Source: *Field Survey, 2016.*

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Relationship between Training Need and Socioeconomic Characteristics.
The results in Table 4 indicate that there is a significant relationship between marital status of farmers (χ^2 = 18.46, p < 0.05), variety planted (χ^2 = 6.397, p < 0.05) and their training needs. The implication is that farmers that are married will need more training than those not married. Similarly, the variety planted will influence the training needs of respondents.

Table 4: Relationship between socioeconomic characteristics and training needs.

Socioeconomic characteristics	χ^2 Value	Degree of Freedom
Sex	0.13	1
Marital Status	18.46*	4
Religion	3.195	2
Variety Planted	6.397*	2

* P < 0.05
Source: *Field Survey, 2016.*

Table 5, shows that there is a significant relationship between training needs and the age of farmers (r = 0.181, p < 0.05), farm experience (r = 0.199, p < 0.05) and household size (r = 0.125, p < 0.05). That means the age, farming experience and household size of farmers can influence their training needs. Ogunleye *et al* (2012), in their study of Training needs of cassava processor in Oyo State, Nigeria reported of a significant relationship between age of respondent and training needs. Similarly, Adeogun *et al.,* (2013) reported of a significant relationship farming experience and training needs of Cocoa farmers' association in Cross River state. Since the correlation coefficient is positive for age, it means that as farmers grow older, they will require more training to keep pace with technological advancement. Likewise farming experience and household size. The more the years spent in farming and the larger the household, the more training respondents will need

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Table 5: Correlation analysis between socioeconomic characteristics and training needs.

Socioeconomic Characteristics	Correlation (r)
Age	0.181*
Farm Experience	0.199*
Farm Size	–0.023
Household Size	0.125*
Farm Output	–0.020

*P < 0.05. ***Source:*** *Field Survey, 2016.*

Conclusion and Recommendations

The bulk of cassava producers in the region are small scale producing mainly for consumption. The trainings organized were quite few and not enough to impact on farmers' level of skill and competence. Thus, there were valid cases of skill and competency gap in various aspects of cassava production hence the expressed need for trainings to close the gaps.

For improved productivity, farmers training should concentrate on the critically expressed areas of skill and competency gap. Training and re-training of farmers in the region should be an ongoing process because of the rapid changes in science and technology. This will ensure that they are very current with advances in modern farming techniques especially in cassava production

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