

Analysis of Training Needs of Cassava Processors in Kwara State, Nigeria

Olatinwo L.K.,¹ Olanrewaju T.O.,² Fawole B.E.¹ and Oduwaiye M.O.³

¹Department of Agricultural Economics and Extension, Federal University, Dutsin-Ma

²National Agricultural Extension and Research Liaison Services, ABU, Zaria

³Department of Agricultural Extension and Rural Development, University of Ilorin, Ilorin

Nigerian Journal of Agricultural Extension, Vol. 19, Number 2, June 2018

Abstract

This study examined training needs of cassava processors in Kwara State, Nigeria. The specific objectives were to: (i) describe the socio-economic characteristics of cassava processors; (ii) determine the perceived knowledge level of processors on improved methods (iii) identify areas of training needs to cassava processors. Sampling technique was used to select 120 respondents from the list of contact cassava processors retrieved in the state Agricultural Development Programme. A purposive selection of 2 Local Government areas in the state based on their prominence in cassava processing, from each of the local government areas, 2 communities were randomly selected. The findings showed that: mean age of the respondents was 25 years; majority of them (93.3%) were female; a little below average (48.3%) had one form of education or the other; their major sources of information on cassava processing was extension agent (mean=2.18); their knowledge level on cassava processing skills was high (mean=2.05), major areas of training needs were processing operations (mean=9.21) and handling/packaging of processed products (mean=7.61). The study concluded that cassava processors in the state require trainings in processing operations and handling/packaging of processed products, credit acquisition and selection of tuber varieties suitable for production. It was therefore recommended that cassava processors in the state should be trained in the needed areas.

Keywords: Cassava, processors, training needs

Introduction

Nigeria is blessed with large expanse of land spanning from the coast to the Sahel which allows wide range of crops and livestock production. The northern part is suitable for the production of cereals and grain legumes like sorghum, millet, maize, cowpea, groundnut, cotton, and sesame. The southern part supports the production of roots and tubers such as yam, cassava, cocoyam, and plantain. In the flooded parts of the south, swampy rice is grown while in the middle belt, cereals, grain legumes, yam and cassava are grown (Adegeye, 1993). Cassava (*Manihotesculenta Crantz*) is a major staple food in Nigeria, eaten either unprocessed or in processed form. According to Nyerhovwo (2004), eighty

per cent of Nigerians reside in the rural areas and they eat a cassava meal at least once a day. When compared with rice and maize, cassava has a carbohydrate content which is about 40% higher than rice and 25% more than maize (Nyerhovwo, 2004). Also, it is the cheapest source of calories for human consumption. Hence, cassava plays a major role in the country's food security. Cassava is a major root crop grown by farmers throughout Nigeria for cash, food, feed and raw material for agro-allied firms (Onwumere et al., 2006; Francisco, 2004). The prominence of cassava on the national agricultural profile of Nigeria could be seen in the fact that it is efficient in the production of energy required by

humans and is suitable for the present farming system in Nigeria. According to IITA (2002), Nwokoro et al. (2007) and Adekunle (2013), the characteristics of the common cassava products available for human consumption in Nigeria include *gari*, *fufu*, cassava chips, cassava flour, starch, farina, tapioca, macaroni, cassava bread and pudding.

Cassava processing activities are widespread in the rural areas being the most formal processed crop in the Southern and Middle Belt areas of the country (Oni, 2005; TAHRA, 2005). The nature and stress involved in the processing activities of cassava makes both men and women a significant contributor in the industry (Omolehin et al., 2007). Nweke et al. (2002) identified two broad methods of cassava processing, namely traditional and mechanized processing. Nweke et al. (2002) further found that both methods had constraints including compromised product quality, reduced efficiency in labour and cost of production.

Nigeria is the world largest producer of cassava with about 38 million metric tonnes per annum ahead of other producers like Brazil and Thailand (Akinwumi and Yusuf, 2003; FAO, 2004; Ashaye et al., 2005). Cassava cultivation is mostly done by farmers in southern and middle belt areas of the country. The major constraint of cassava production is rapid deterioration of the roots after harvest. Cassava roots have a shelf-life of 24–48 hours after harvest (Stephen and Eric, 2009; Nyerhovwo, 2004). Once harvested, it has to be either consumed immediately or processed into more stable product forms. Fresh roots must be processed within 2 to 3 days from harvest in order to reduce losses and eliminate its cyanogenic glucosides (Nweke, 2003; Ndaliman, 2008). Losses in cassava processing as reported by Olanrewaju et al. (2014) are about 23% for local centers and 17% for improved technology centers. Cassava is processed into different final products as presented in figure 1. Ekong (2003) stressed that agro-processing can play a deliberate role

in growth strategies in the rural economy, because earnings from it account for 30 - 45% of rural household income. Also, Olanrewaju et al. (2014) reported that cassava processing is prominent in the traditional scale, subjecting the processing to a number of undesirable attributes which are time consuming, low yields and lack of storage capacities.

The need to assess the cassava processors' skill gap in order to identify training needed by the processors through extension services in Nigeria is therefore inevitable. This is because varying quality and drudgery involved in the processing of cassava are some of the important reasons responsible for the recurrent short fall in domestic cassava products supply in the country. Training is the process of acquiring specific skills to perform a job better. This process of training has been identified by Adesiji (2006) as important for developing individuals with genuine professional competence. According to Halim and Ali in FAO (1992) document, training need is a condition where there is a gap between 'what is' and 'what should be' in terms of incumbents' knowledge, skills, attitudes, and behaviour for a particular situation at one point in time. This gap is called 'a problem,' which usually occurs when a difference exists between 'desired performance' and 'actual performance.' The needs identification process assists extension agents in making sure that they have matched a training programme to a training problem. Adekunle (2013) explained agricultural extension as a process where knowledge, research findings or innovations are taken to people involved in farming activities under the guidance of governing elders, in an out-of-school setting, with an intention to change their knowledge, attitude and skills to improve their living standard.

Despite the economic potential in agro-processing, cassava processors in Nigeria are plagued with several challenges such as inadequate funds, inadequate storage facilities and low prices of processed products, hence, this

study therefore sought to ascertain the socio-economic characteristics of cassava processors, determine the perceived knowledge levels of processors on improved cassava processing methods and identify the training needs of cassava processors. The study hypothesized that there is no significant relationship between socioeconomic characteristics of processors and their training needs.

Methodology

The study was carried out in Ilorin, Kwara State capital. It is located between latitude 8° 30'N and longitude 5° 0' E (NPC, 2006). The State has an area of 36,825 square kilometres. The projected population of the state was put at 3,290,944 in 2017 from the 2006 figure of 2,371,089 at a growth rate of 3.05 percent per annum. The State is made up of four main ethnic groups namely: Yoruba, Nupe, Fulani and Baruba (NPC, 2006). The State comprises of 16 Local Government. The population of the study comprised all cassava processors in Kwara State. Multi stage sampling technique was adopted to select 120 respondents from the list of contact of cassava processors retrieved from Kwara State Agricultural Development Programme (ADP). First stage was a purposive selection of Ifelodun and Irepodun Local Government areas from the state based on their prominence in cassava processing. Secondly, 2 communities were randomly selected from each of the selected LGAs. The third stage was also a random selection of 30 cassava processors from each community making a total sample size of 120. Data collection was through structured interview schedule and analysed with both descriptive and inferential statistics including frequency counts, percentages, means, and multiple regressions. The regression was carried out using the Statistical Packages for Social Science.

Results and Discussion

The age of respondents as presented in Table 1 was between 20-50 years with the mean age of 25 years. This showed that

majority of cassava processors in the States are in their middle age and the younger generations was noticed to be actively involved in cassava processing; a good implication on their productivity, as they might have been the labour required in cassava processing. This is in line with studies of Odebode and Arimi (2008) and Ogunleye et al. (2008) who found that majority of cassava processors are in their active years. In the state, more than half (55.8%) of the processors are single, about 35.0% are married while 5.0% are divorced and the remaining 4.2% are widowed. Studies revealed that cassava processors were dominated by singles. By implication, the married men and women in the state seem uninterested in cassava processing. This is also follows from the age distribution of processors in Table 1. The married cassava processors are quite few compared to their single counterparts. Married processors tend to be a little older and more responsible but single processors could be younger, more vibrant and responsive towards processing activities and innovations.

Also, results in table 1 showed that majority (93.3%) of the processors are female with only 6.7% as males. This finding implies that cassava processing in the state is dominated by female processors. 17.5% of the respondents were Christians and 81.7% of the processors were Muslims, an indication that Muslims are into cassava processing than Christians. This may be attributed to reasons that include geographical location and dominating religion in the states. Similar findings had been observed by Ajepe et al. (2016) who found that above 90% of their respondents participating in agro processing value chain enterprise in Kwara state had religion affiliation as Islam. Cassava processors in the state had almost half (51.7%) of the processor with no formal education while only 2.5% of the processors had secondary education. This finding is similar to the study of Oluwasola (2010) who discovered that

cassava processors in Oyo state also have low level of education.

It was observed that (90.0%) of the respondents has cassava processing as their primary occupation, while 5.83%, 3.33% and 0.84% have trading, farming and mechanic as their primary occupation respectively. The occupational distribution of the respondents implies that, cassava processing is the main activities among processors in the study area. The household size of respondents show that the majority (75.0%) of processors had household size between 6-10 persons, 20.8% had a size between 1 to 5 persons and only 4.2% had household size between 11-15 persons while none (0.0%) of the processors had a household more than 15 persons. The average household size of cassava processors in the state was 7 persons. Majority (61.7%) of the respondents have their years of experience between 6-10 years. The average years of cassava processing experience among cassava processors in the state was approximately 9 years.

Table 2 shows the result on the perceived knowledge of cassava processors on cassava processing skills in the state. It was revealed that Processors in the state were found to possess low knowledge in equipment purchasing process (mean=1.56), value added products processing (mean=1.28), equipment maintenance skill (mean=1.58), and packaging skill (mean=1.87). This finding corroborates the study by Davies et al. (2008) that found that cassava processing machines in Oyo state had been abandoned as results of untrained machine operators, and skilled maintenance personnel.

The results of the training need analysis of cassava processors in the state is presented in table 3. The areas where training are needed among cassava processors in the state were: processing operations such as improved skills for peeling, washing, pressing, sifting, frying, drying, milling and grading activities (total mean=9.21), improved skill for handling and packaging of processed

products (total mean=7.61), skill for selecting varieties of tubers for suitable products (total mean=7.39), preservation skill of processed products (total mean=7.38), and marketing strategies of processed products (total mean=7.31).

Result of regression analysis presented in Table 4 identified seven socio-economic determinants of cassava processors' training needs in Kwara state produced adjusted R² value of 0.902. This implies that the variables accounted for 90.2% of the observed variations in determining the training needs of cassava processors in the state.

Specifically, this study revealed that educational status, marital status, gender, and years of processing experience were positively significant at $p \leq 0.001$ level. Hence, the null hypothesis is rejected and the alternative is accepted. This further implies that increase in educational status, marital status, gender, and years of processing experience of respondents, the more respondents need for training in skills for cassava processing. Education is known to improve information seeking behaviour as the educated processors will be willing to be updated of innovative technology. Also, marital status of processors with household responsibilities such as clothing for children, house rent and others may influence readiness to be trained in new innovation expected to increase income. Processors with few years of processing experience and growing in the knowledge of the enterprise will always want to know more of innovation that could bring more income. Years of association membership had inverse relationship with training needs of processors. Hence, the null hypothesis is rejected and the alternative is accepted. This finding implies that increase in years of membership of cassava processing association will decrease respondents' need for training. As regards age and household size of respondents, these variables were found to have no influence on training needs of respondents in the state; hence the null hypothesis is accepted. This further

implies that increase or decrease in age and household size of cassava processors in the state will not influence their interest to be trained.

Conclusion and Recommendation

The findings of the study revealed that cassava processors in Kwara state were found to have high knowledge in credit acquisition procedure. Majority of the Cassava processors in the state were found to be female. Knowledge of value added products processing and maintenance of processing equipment were found to be low. Extension packages for cassava processing should incorporate technologies for value-addition and maintenance culture for equipment.

References

- Adegeye, A.J. (1993). Farmers team baseline survey. Report at the SWISS Nigeria Chemical Co. Ltd. CIBA CEIGY Ltd. (Plant Protection). Pp. 1-3.
- Adekunle, O.A. (2013). *Key to Unlock*. The 120th inaugural lecture. University of Ilorin, Nigeria. Pp. 18-22.
- Adesiji, G.B. (2006). Competency needed by village extension agents of Osun State Agricultural Development Programme, Nigeria. *Agrosearch*, 8(1):193-101.
- Ajepe G. B., Adekunle A.O., Ajibola B.O. and Komolafe S.E. (2016). Women participation in the activities of melon value chain enterprises in Kwara State, Nigeria. *Journal of Agricultural Faculty of Gaziosmanpasa University*, 33(2): 1-8.
- Akinwumi, J.A. and Yusuf, S.A. (2003). Cassava production for the world market problems, prospects and challenges. Paper at the First National Conference on Nigeria Cassava Organized by Trend Solution Consultancy Limited. Held on 11th to 12th November, Merit House, Aguiyi Ironsi Street, Maitama, Abuja.
- Ashaye, O.A., Adegbulugbe, T.A. and Dawodu, O.J. (2005). Evaluation of processing technologies of cassava chips and flour in Oyo and Ogun states of Nigeria. *World J. of Agricultural Sciences*, 1(1):56-58.
- Davies, R.M., Olatunji, M.O. and Burubai, W. (2008). Mechanization of cassava processing in Iwo Local Government Area of Osun State, Nigeria. *World Journal of Agricultural Sciences*, 4 (3): 341-345.
- Ekong, E.E. (2003). *Poverty and Rural Development in Nigeria: An Introduction to Rural Sociology*. Dove Educational Pub.; Uyo, Nigeria. 340-371.
- Food and Agriculture Organization (1992). *Planning of Effective Training. A Guide to Curriculum Development*. FAO; Rome.
- Food and Agriculture Organization (2004). Draft working notes on selected chapters of "World Cassava Economy: Recent trends and medium-term outlook"- Global Cassava Development Strategy: Progress Review Workshop. Rome: International Fund for Agricultural Development.
- Francisco, D.R.V. (2004). The determinants of firms' growth: An empirical examination series documents of Trabajo. April, 3rd draft.
- International Institute of Tropical Agriculture (IITA) (2002). *Competitiveness Workshop. In opportunities for Cassava in Nigeria: Bookanga/ IITA; Ibadan.*
- Ndaliman, M.B. (2008). Development of cassava grating machine: A dual-operational mode. *J. of South American Academic*, 9: 1103-110.
- NPC (2006). *Census Report*. National Population Commission. Abuja.
- Nweke, F.I., Spencer D. and Lynam J.K. (2002). *Cassava Transformation: Africa's best kept secret*. East Lang Sing: Michigan State University Press.
- Nweke, F.I. (2003). New challenges in cassava transformation in Nigeria and Ghana. Paper presented at the WENT, IFPRI, NEPAD and CTA conference on success in Africa agriculture. Pretoria; December 1-3.
- Nyerhovwo, J.I. (2004). Cassava and the future biotechnology issues for developing countries. *Electronic Journal of Biotechnology*, 7(1): 22-32.
- Odebode, S.O. and Arimi, K. (2008). Influence of farmers' organizations on socio-economic empowerment of members in Ijebu-Ode Local Government of Ogun State. *Nigerian Journal of Rural Sociology*, 8(2): 81-89.
- Ogunleye, K.Y, Adeola R.G. and Ibigbami I.O. (2008). Gender roles in cassava processing activities among processors in Ogo-Oluwa Local Government Area of Oyo State. *International Journal of Agricultural Economics & Rural Development*, 1(1): 30-37.
- Olakulehin, J.O. and Ajiola, F.S. (2005). Cassava production: Nigerian's best kept secret. *Lagos Farmer*, 1: 2 – 4.
- Olanrewaju, T.O., Agbetoye, L.A.S. and Kolawole, O.P. (2014). Modelling the performance of cassava dewatering machine. *Proceedings of the 15th*

International Conference and 35th Annual General Meeting of the Nigerian Institution of Agricultural Engineers. Held at the Federal University of Technology, Akure, Nigeria. 22– 26 September. 818–835.

Oluwasola, O. (2010). Stimulating rural employment and income for cassava (*Manihot sp.*) processing farming households in Oyo state, Nigeria through policy initiatives. *Journal of Development and Agricultural Economics*, 2(2):018-025.

Omolehin, R.A., Ogunfeditimi T.O. and Adeniji O.B. (2007). Factors influencing adoption of chemical pest control in cowpea production among rural farmers in Makarfi Local Government Area of Kaduna State, Nigeria. 54-56.

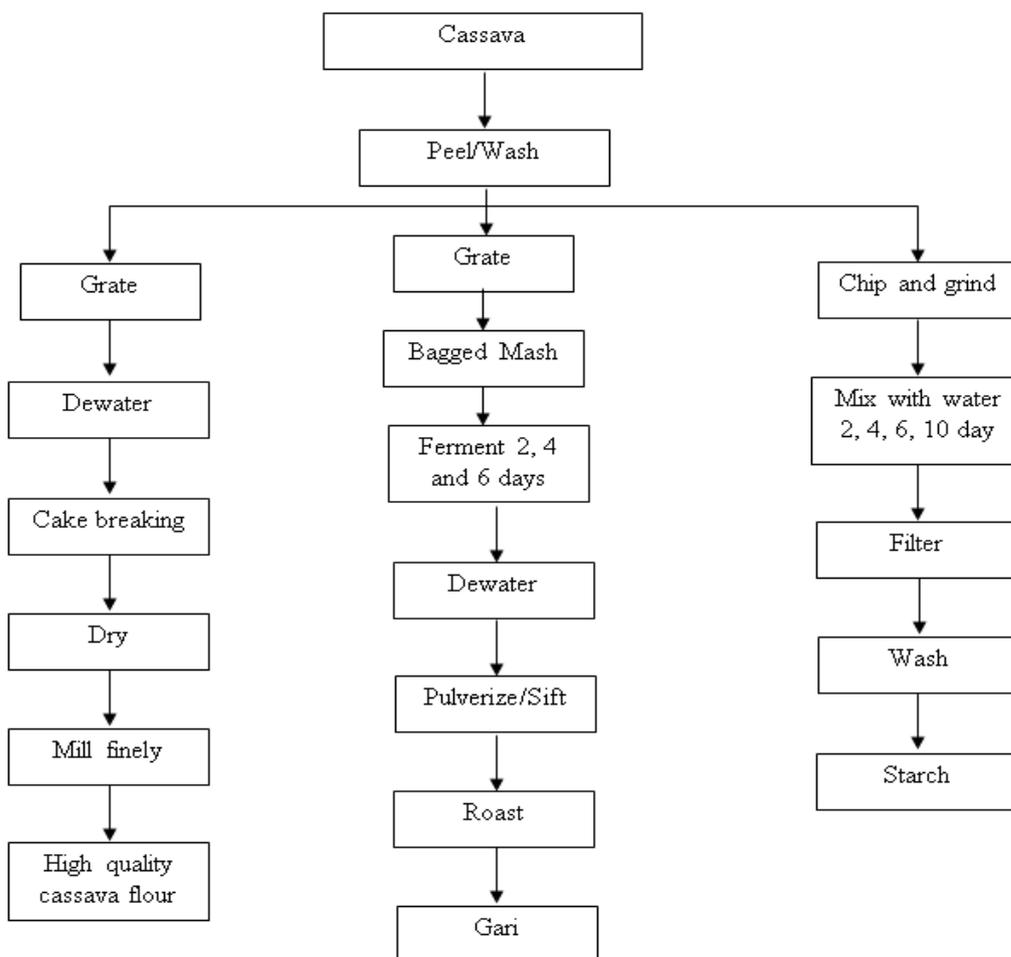
Oni, S. (2005). Effect of methods of preparation on the nutrition: Composition of some cassava products. *Journal of Food Chemistry*, 4(2): 349 – 354.

Onwumere J., Nwajiuba C.U., Asumugha G.N. (2006). Intra-sectoral linkages in cassava-based agribusiness in Abia State. *Proceedings of Nigeria Association of Agricultural Economics*, held in LAUTECH Ogbomosho, Oyo State. 53 – 61.

Stephen, K.A. and Eric, K.G. (2009). Modification of the designs of cassava grating and cassava dough pressing machines into a single automated unit. *European Journal of Scientific Research*, 38(2): 306-316.

Technical Assistance to the House of Representative on Agriculture (2005). Promoting value adding in Nigerian agriculture: The cassava industry example. Policy brief No.3.

Fig. 1: Flow chart of cassava processing stages and different final products



Source: Ekong (2003)

Table 1: Socioeconomic characteristics of cassava processor in the study areas

Variables	Frequency	Percentage
<i>Age (years)</i>		
30 and below	92	76.7
31-40	21	17.5
41-50	5	4.1
Above 50	2	1.7
<i>Mean score (Std. Dev.)</i>	25.08 (9.506)	
<i>Single</i>		
Single	67	55.8
Married	42	35.0
Divorced	6	5.0
Widowed	5	4.2
<i>Gender</i>		
Male	8	6.7
Female	112	93.3
<i>Religion</i>		
Islam	98	81.7
Christianity	21	17.5
Traditional	1	0.8
<i>Level of Education</i>		
No Formal Education	62	51.7
Adult Education	20	16.7
Primary Education	35	29.1
Secondary Education	3	2.5
Tertiary education	0	0.0
<i>Household size (No of persons)</i>		
1-5	25	20.8
6-10	90	75.0
11-15	5	4.2
16-20	0	0
<i>Mean score (Std. Dev.)</i>	7.0 (2.631)	
<i>Primary Occupation</i>		
Cassava Processing	108	90.0
Trading	7	5.83
Farming	4	3.33
Mechanic	1	0.84
Student	0	0
<i>Cassava Processing Experience (years)</i>		
1-5	18	15.0
6-10	74	61.7
11-15	25	20.8
16-20	3	2.5
21-25	0	0
<i>Mean score (Std. Dev.)</i>	8.55 (3.550)	

Source: Field survey, 2015

Table 2: Perceived knowledge of cassava processors and processing skills in Kwara State

<i>Cassava processing Skills</i>	<i>NK</i>	<i>AK</i>	<i>AAK</i>	<i>Mean</i> <i>(Std. Dev)</i>	<i>Decision</i>
	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>		
Skill for operating processing machines	10 (8.3)	77 (64.2)	33 (27.5)	2.19 (.569)	High
Selection of varieties suitable for cassava processing	15 (12.5)	17 (14.2)	88 (73.3)	2.61 (.702)	High
Procedure for credit Acquisition	17 (85.8)	15 (12.5)	88 (73.3)	2.59 (.728)	High
Link to buying agent and Market	8 (6.7)	15 (12.5)	97 (80.8)	2.74 (.572)	High
Equipment purchasing Process	68 (56.7)	37 (30.8)	15 (12.5)	1.56 (.708)	Low
Value added products Processing	91 (75.8)	25 (20.8)	4 (3.3)	1.28 (.518)	Low
Equipment maintenance skill	65 (54.2)	40 (33.3)	15 (12.5)	1.58 (.705)	Low
Packaging	40 (33.3)	56 (46.7)	24 (20.0)	1.87 (.721)	Low
Grand mean				2.05	High

Note: NA= No Knowledge, AK= Average Knowledge, AAK= Above Average Knowledge:

Bench mark for knowledge level has mean score = 2.00. Decision rule: Mean score = 2.0 and above (High knowledge), mean score = 1.99 and below (Low knowledge).

Table 3: Training need analysis (TNA) of cassava processors in Kwara State

<i>Cassava processing Duties</i>	<i>Mean of Frequency of Performance</i>	<i>Mean of importance</i>	<i>Mean of difficulty</i>	<i>Total Mean Score</i>	<i>Focus/Remark</i>
Processing Operations	3.69		3.19		
	1.82	2.33	2.88	9.21	Need Training
Maintenance Handling and packaging of processed product		2.20		6.9	Training Not needed
	2.56	2.62	2.43	7.61	Need Training
Safety procedure	2.23	2.19	2.22		Training Not needed
Selection of suitable varieties	2.82	2.59	1.98	7.39	Need Training
Link to buying agent and market	2.33	2.51	2.24	7.08	Training Not needed
Operating processing machine	1.63	2.08	2.53		
	1.70	2.70	2.53	6.24	Training Not needed
Credit acquisition				6.93	Training Not needed
Equipment purchasing process	1.61	2.35	2.18		
				6.14	Training Not needed
Environmental protection	2.24	2.22	2.12	6.58	Training Not needed

Preservation	3.04	2.31	2.03	7.38	Need Training
Packaging and storage of processed product	2.62	2.34	2.06		Training Not needed
Marketing	2.79	2.48	2.04	7.02	Need Training
<i>Threshold value</i>				7.11	

Source: Field survey, 2015

Table 4: Result of multiple regression analysis to identify socio-economic determinants of cassava processors' training needs in Kwara state

Model	Coefficient	Std. Error	T
(Constant)	-0.019	.190	-.101
Age	0.0001	.004	-.025
Education status	0.349***	.107	3.262
Marital status	0.413***	.054	7.648
Gender	0.388***	.100	3.890
Household size	0.005	.018	0.278
Years of processing experience	0.051***	.011	4.636
Years of association membership	-.033***	.009	-3.683

Dependent Variable: Training Needs

Adjusted R Square = .902 = **90.2%**

Std. Error of the Estimate = .22823

F-Statistics = 157.443

Sum of square residual = 5.834

Note: *** Significant at 0.1%.