GENDER DIFFERENTIALS IN LABOUR PRODUCTIVITY AMONG SMALL-HOLDER CASSAVA FARMERS IN IDEATO LOCAL GOVERNMENT AREA OF IMO STATE, NIGERIA

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SUMMARY

This study examined gender differentials in labour productivity among small-holder cassava (Manihot esculenta Crantz) farmers in Ideato Local Government Area of Imo State, Nigeria in 2008. The study data was collected through a multi-stage random sampling technique from 120 cassava farmers, consisting of 60 males and 60 females. For the male farmers, the coefficients for household size and credit were negatively related to labour productivity and significant at 10.0% level of probability. For the female farmers, the coefficient for farm size was negative, while access to credit was positive; both were significant at 1.0% level of probability. The coefficients for education and age were negative and significant at 5.0% level of probability for all the farmers. The results call for policies aimed at land reforms by making more lands and easy accessibility to credit available to women younger and more agile for increased labour productivity.

Key-words: Cassava, gender, labour productivity

INTRODUCTION

Nigeria produces the largest amount of cassava (*Manihot esculenta* Crantz) in the world followed, in descending order, by Brazil, Thailand, the Democratic Republic of Congo (DRC), Ghana, Tanzania, Mozambique, Uganda, and Madagascar (Dayo *et al*., 2009). Cassava is an important staple food and cash crop in several tropical African countries especially Nigeria where it plays a principal role in the food economy (Agwu and Anyaeche, 2007). Cassava is a staple food crop in South-Eastern Nigeria contributing about 15% of the daily dietary energy intake of most Nigerians and supplies about 70% of the total calories intake of about 60 million people in Nigeria (Ezulike et al., 2006). Nigeria is the world's largest producer of cassava, with about 47,274,320 t and yield of 13.027 t ha^{-1}. The South-East zone is leading in cassava production accounting for over 37% of the National production (NAERLS and NFRA, 2009).

Gender analysis focuses on the different roles and responsibilities of women and men and how they affect society, culture, the economy and politics. Women are often marginalized in their families and their communities, suffering from a lack of access to credit, land, education, decision-making power and rights to work. Explicitly, gender analysis focuses on the relations between men and women (Spieldoch, 2007). There are 450 million women and men working as agricultural labourers worldwide who neither own nor rent the land on which they work including the tools and equipment they use. These workers comprise over 40% of the world's agricultural labour force often living below the poverty line and forming part of the majority of the rural poor in many parts of the world (FAO-ILO-IUF, 2005).

The number of waged female agricultural workers, currently at 20-30% of the waged workforce is increasing (Spieldoch, 2007). According to the United Nations (2006), women are responsible for over half the world's food production. In developing countries, rural women are responsible for over half the world's food production. In these, rural women produce between 60-80% of the food and are the main producers of the world's

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staple crops (Ajani, 2008). According to Huston (1993), women's share of food production in Sub-Saharan Africa is estimated at 80% while Mijindadai (1993) asserted that in Nigeria women are responsible for about 70% of actual farm work and constitute up to 60% of the farming population.

Influence of labour on agricultural labour utilization has been empirically reported in various micro level studies in Nigeria. Nweke et al. (2002) pointed out that men increase their labour input in cassava producing areas where cassava is mainly produced for cash and urban consumers. Ezumah and Domenico (1995) reported the use and distribution of labour in various farm activities in three types of farms operated by Igbo Women in Nigeria. Okoye et al. (2008) studied the determinants of labour productivity among cocoyam (*Colocasia esculenta*) farms in Ananmbra State Nigeria. There is a dearth of information on gender differentials with respect to labour productivity in cassava production.

Agricultural productivity estimates for Nigeria showed productivity growth decline from the 1960s to the 1980s. Nigeria has experienced strong growth in the past few years, averaging 8.8% real annual GDP growth from 2000 to 2007 (Dayo et al., 2009). Due to the domestic roles of women and the lack of freedom to participate in on-farm activities in some communities, there is the tendency to undervalue labour productivity in Nigeria (Dayo ibid. 2009). Studies on gender differentials in labour productivity among small-holder cassava farmers is an important step in formulating policies to reverse these trends in the future.

METHODOLOGY

The study area is Ideato Local Government Area of Imo State. A multi-stage random sampling technique was used for the study. The farmer participatory research involved 120 farmers, 60 males and 60 females from three sub-circles drawn from 5 circles randomly selected from 2 blocks in the zone. Primary data was collected with the aid of a well structured questionnaire and included such variables as output, land, capital, labour, fertilizer, planting materials, age, household size, education, access to credit, membership of cooperative societies, number of extension contacts, etc.

Analytical Procedures

The log-linear model derived from the semi-log functional form was the econometric model specified for explaining labor productivity following Ukoha (2000) and Okoye et al. (2008) in cocoyam production. This functional form is the most popular in applied research because it is easiest to handle mathematically (Koutsoyiannis, 1979). It is only when satisfactory results are not obtained from these models that other forms are tried out, following Ukoha (2000). The model is described by the following equation:

$Y/N = f$ (lnEDU, lnAGE, lnHHS, lnHA, lnDEP, lnCASS, lnFERT, CREDT, COOP)

Where

Y	=	Casssava output in kg
EDU	=	Farmers level of education in years
AGE	=	Age in years
HHS	=	Household size
HA	=	Farm size in hectares
DEP	=	Capital input in NGN made up of depreciation, charges on farm tools and equipment, interest on borrowed capital and rent on land
CASS	=	Planting materials in bundles
FERT	=	Fertilizer (In-organic) input in kg ha^{-1}
CREDT	=	Access to credit (dummy variable; 1=access, 0= no access)
COOP	=	Membership of cooperative societies (dummy variable; 1=member, 0=non member)

$$\text{Yield (t ha}^{-1}) = \frac{\text{Sample output (kg)} \times 10}{\text{Area harvested (m}^2)}$$

$$\frac{\text{Yield}}{N} = \text{Labour productivity (kg man}^{-1} \text{ day}^{-1})$$

RESULTS AND DISCUSSION

Average Statistics of Cassava Farmers

The average statistics of the sampled cassava farmers are presented in Table 1. On the average, a typical cassava male farmer in the LGA is about 48 years old, 10 years of education, household size of 9 persons, 10 years of education, 1.6 ha of land, spent NGN 166.16 on capital inputs, planted 70 bundles of cassava, used 275 kg of fertilizer, utilized 149 man-days of labour and had contact with extension agents 3 times. The average female cassava farmer is 49 years old, with 11 years of education, household size of 10 persons, cultivated 0.8 ha, spent NGN 108 on capital inputs, planted 40 bundles of cassava, used 237 kg of fertilizer, utilized 143 man-days of labour and had contact with extension agents once. An average male cassava farmer produced and output of 12 t, yield of 7 t of cassava with labour productivity of 47.29. Their female counterparts produced an output of 7 t, yield of 9 t of cassava with labour productivity of 63. Female farmers had more yield and were more labour productive while their male counterparts had more land. Akinsanmi et al. (2005) found out that female heads of households are more efficient with the use of labour while male heads are more efficient with the use of land.

Table 1. Average Statistics of Cassava Farmers by Gender in Ideato LGA of Imo State, Nigeria

Tablica 1. Prosječna statistika uzgajivača kasave prema spolu u području Ideato Imo države, Nigerija

Variable	Male	Female	Total
Education (years)	10.03 (4.77)	10.73 (4.23)	10.38 (4.50)
Age (years)	47.67 (9.93)	49.18 (6.94)	48.42 (8.56)
Household size	9.40 (5.24)	9.50 (4.02)	9.45 (4.65)
Farm size (ha)	1.59 (0.58)	0.83 (0.55)	1.53 (0.57)
Depreciation on capital inputs (NGN)	166.16 (178.34)	108.17 (43.04)	137.41 (132.89)
Cassava bundles	70.35 (47.16)	40.11 (93.90)	53.63 (71.31)
Fertilizer (kg ha^{-1})	275.00 (126.72)	237.50 (118.47)	256.25 (123.59)
Labour (mandays)	149.13 (255.61)	143.7 (38.19)	146.41 (39.63)
Output (kg)	12,231.08 (8,520.58)	7,283.75 (3,781.81)	12,757.39 (8,142.38)
Number of extension contacts	3.41 (2.14)	1.40 (1.38)	2.13 (1.85)
Yield (kg ha^{-1})	7,425.41 (3,834.97)	8,932.11 (5,971.35)	8,115.92 (4,703.16)
Labour productivity (kg man^{-1} day^{-1})	47.29 (32.96)	62.92 (47.95)	67.15 (40.63)

Source: Field survey data, 2008. Numbers in parenthesis are standard deviations

The data in Table 2 show the results of the econometric analysis for male and female cassava farmers in Ideato LGA of Imo State, Nigeria. The F-ratios were significant at 1% while R^2 was 0.79 and 0.95 for the male and female farmers respectively, which implies that the variables in the model were able to explain 79 and 95% of the variability in labour productivity by male and female farmers respectively.

Table 2. Determinants of Labour Productivity in Cassava Production according to Gender in Ideato L.G.A of Imo State, Nigeria

Tablica 2. Odrednice produktivnosti rada u proizvodnji kasave prema spolu u području Ideato Imo države, Nigerija

Production Factors	Coefficients	
	Males	Females
Constant term	-1169.658 (-2.408*)	-1689.710 (-5.975***)
ln EDU	-45.840 (-2.899**)	-25.438 (-3.255**)
ln AGE	-371.084 (-2.856**)	-88.666 (-3.394**)
ln HHS	-69.920 (-1.976*)	16.884 (0.775)
ln HA	-6.897 (-0.188)	-128.143 (-4.299***)
ln DEP	28.864 (0.909)	7.763 (0.592)
ln CASS	26.341 (1.114)	-2.909 (-0.542)
ln FERT	-13.460 (-0.421)	79.367 (1.690)
ln CREDT	-201.199 (-2.267*)	962.362 (13.417***)
ln COOP	29.076 (1.507)	-2.831 (-0.187)
R^2 F	0.796 19.070***	0.958 97.446***

Source: Field survey data, 2008. Numbers in parenthesis are t-values; Labels *, ** and *** = significant at 10, 5 and 1%, respectively

The signs of the coefficient for education and age were negative and significantly related to labour productivity for the male and female farmers in the study. This implies that increase in education and age will lead to a corresponding decrease in labour productivity. The negative effect of education is unexpected and may suggest the strong competing effect of diverting skills to other off-farm employment opportunities as the level of education increases (Holloway et al., 2000). The negative effect of age is expected since those who are younger are stronger than their aged counterparts, following Okoye et al., (2008) in their study on gender productivity of cocoyam in Anambra State.

The coefficient of household size and access to credit for the male farmers were negative and significantly related to labour productivity at 10.0% level of productivity. This implies that any increase in these variables will lead to a corresponding decrease in labour productivity. This may be due to the fact that the male farmers divert most of the credit to other non-farm activities like health, paying of children school fees as well as other innumerable households' demands emanating from large house holdings. The coefficient of credit access for female farmers was positive and significant at 1.0% level of probability. Anyanwale and Alimi (2004) in Oyo State found out that although men had more of their requested loans granted than women, women obtained more loans than men in absolute terms.

The coefficient for farm size was negative and significant at 1.0% level of probability, indicating that small farm sizes led to increased labour productivity for women. Women relatively hold small parcels of less fertile land that are less conducive to efficient farming practices (Anosike and Fasona, 2004). This has led to the adoption of different farming methods to increase yields. Consequently, female farmers tend to manage labour more effectively to increase productivity.

The coefficients of farm size and fertilizer for the male farmers were negative but not significant including depreciation on capital inputs, number of cassava bundles planted and membership of cooperative societies which were negative. For the female farmers' the coefficients for household size, depreciation on capital inputs and fertilizer were positive but not significant including cassava bundles planted and membership of cooperative societies which was negative.

CONCLUSION

The study showed that women were more labour productive than their male counterparts in cassava production in the study area. Formal education opportunities should be made available and targeted especially to the female children and provision of easily accessible credit facilities. There is strong suggestion for land reform policies geared towards the re-distribution of land to make more lands available to women still young

and agile who form the bulk of the population in cassava production.

REFERENCES

1. Agwu, A.E., Anyaeche, C.L. (2007): Adoption of Improved Cassava Varieties in Six Rural Communities of Anambra State, Nigeria, *African Journal of Biotechnology* 6(2): 089-098.

2. Ajani, O.I.Y. (2008): Gender Dimensions of Agriculture, Poverty, Nutrition and Food Security in Nigeria. Nigeria Strategy Support Programme (NSSP) Background Paper No. NSSP 005. IFPRI, Abija, Nigeria, 40 pp.

3. Ajani, O.I.Y., Adeoti, A.I., Adenegan, K.O. (2001): Women in Agriculture and Poverty Reduction. In Poverty Reduction and the Nigerian Agricultural Sector, ed. Okunmadewa, F. Elshaddai Global Ventures Ltd.: 127-144.

4. Akinsanmi, A., Doppler, W., Nwajiuba, C. (2005): Gender Inequalities and their implications for Living Standard and Food Securirty among Male and Female-Headed Households in Imo State, Nigeria. Conference on International Agricultural research for Development, October 11-13, Tropentag, Stuttgart-Hohenheim.

5. Anosike, V., Fasona, M. (2004): Gender Dimensions of Urban Commercial Farming in Lagos, Nigeria. Urban Agriculture Magazine.

6. Anyawale, A.B., Alimi, T. (2004): Micro-Financing as a Poverty Alleviation Measure: A Gender Analysis. Journal of Social Science 9(2): 111-117.

7. Chianu, J.N., Tsuji, H. (2004): Missing Link in Sustainable Food Production in West Africa: Case of the Savannas of Northern Nigeria. Sustainable Development 2(2): 93-103.

8. Dayo, P., Nkonya, E., Pender, J., Oni, O.A. (2009): Constraints to Increasing Agricultural Productivity in Nigeria: A Review. Nigeria Strategy Support Programme (NSSP) Background Paper No. NSSP 006. IFPRI, Abija, Nigeria, 62 pp.

9. Ezulike, T.O., Nwosu, K.I., Udealor, A., Eke- Okoro, O.N. (2006): Guide to Cassava Production in Nigeria. Extension Guide No. 16. National Root Crops Research Institute, Umudike, Nigeria, 10 pp.

10. Ezumah, N.N., Di Domenico, C.M (1995): Enhancing the Role of Women in Crop Production: A Case of Igbo Women in Nigeria. World Development 10(23): 1731-1744.

11. FAO-ILO-IUF (2005): Agricultural Workers and their Contribution to Sustainable Agriculture and Rural Development. Rome: FAO.

12. Holloway, G.J., Nicholson, C.F., Delgado, C., Staal, S., Ehui, S. (2000): Agro-Industrialization through Institutional Innovation, Transaction Costs, Cooperatives and Milk Market Development in the East African Highlands. Agricultural Economics, 23: 279-288.

13. Huston, P. (1993): The 12 + 12 Approach to Women. In Women and the World Economic Crisis, ed. J.Vickers.

14. Koutsoyiannis, A. (1979): Modern Microeconomics. 2nd (ed), (London and Basinagstoke): The Macmillan Press Ltd., p.75.

15. Mijindadi, N.B. (1993): Determinants of Food Security in Bauchi Area of Northern Guinea Savannah. PhD Dissertation, University of Ibadan, Nigeria.
16. NAERLS and NFRA (2009): Annual Agricultural Performance Survey Report of Nigeria: 2009 Wet Season. NAERLS Press ISBN: 978-978-904-447-4, 134 p.
17. Nweke, Felix I., Dunstan S.C., Spencer, J., Lynam, K. (2002): The cassava transformation: Africa.s best kept secret. Lansing, Mich., USA: Michigan State University Press.
18. Okoye, B.C., Onyenweaku, C.E., Ukoha, O.O., Asumugha, G.N., Aniedu, O.C. (2008): Determinants of Labour Productivity on Small-Holder Cocoyam farms in Anambra State, Nigeria. Academic Journals Scientific Research and Essay, 3(11): 559-561.
19. Spieldoch, A. (2007): A Row to Hoe. The Gender Impact of Trade Liberalization on our Food System, Agricultural Markets and Women's Human Rights. Institute for Agriculture and Trade Policy (IAIP)/International Gender abd Trade Network (IGTN): Frierich-Ebert-Stiftung Geneva, Switzerland.
20. Ukoha, O.O. (2000): Determinants of Labour Productivity on Small-Holder Sole Crop Farms: A Case of Waterleaf Enterprise (*talinum triangulare*). Nigeria Journal of Agribusiness and Rural Development 1(3), Sept. 2000.

RAZLIKE U PRODUKTIVNOSTI RADA IZMEĐU UZGAJIVAČA KASAVE MUŠKOGA I ŽENSKOGA SPOLA NA MALIM POSJEDIMA U IDEATO PODRUČJU IMO DRŽAVE, NIGERIJA

SAŽETAK

Istraživanje se bavi razlikama u produktivnosti rada među uzgajivačima kasave (Manihot esculenta Crantz) muškoga i ženskoga spola na malim posjedima u području Ideato države Imo, Nigerija, 2008. godine.Podaci za ovo istraživanje prikupljeni su u više faza, metodom slučajnog uzorka. Od 120 uzgajivača kasave, 60 sudionika je muškoga i 60 ženskoga spola. Za uzgajivače muškoga spola koeficijenti za veličinu gospodarstva i kredita bili su negativni u odnosu na produktivnost rada i signifikantni na razini vjerojatnosti 10,0%. Što se tiče žena uzgajivača, koeficijent je za veličinu posjeda bio negativan, dok je za dostupnost kreditu bio pozitivan. Oba su pokazatelja bila na razini vjerojatnosti 1,0%. Koeficijenti koji se odnose na obrazovanje i godine starosti bili su negativni i signifikantni na razini vjerojatnosti 5,0% za sve uzgajivače. Ti rezultati služe kao pokazatelji koji će potaknuti provođenje reformi, kako bi se omogućilo mlađim i sposobnim ženama uzgajivačima da lakše dođu do više zemlje i kredita te da se, na taj način, poveća produktivnost rada.

Ključne riječi: kasava, spol, produktivnost rada