A Double-Hurdle Model of Financial Capital Use and Use Incidence among Two Processing Groups of Financial Capital Users in Oyo and Ogun States, Nigeria

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***Abstract* - The study evaluated the impacts of financial capital use on the livelihood outcomes of cassava processors in Oyo and Ogun States, Nigeria. A multistage sampling technique was used to select a sample of 540 small scale cassava processors in Oyo and Ogun States. Data on socioeconomic characteristics, quantity and value of raw cassava roots, labour (man-day) and access to financial capital were collected with the aid of structured questionnaire. Double Hurdle (DH) model was used to analyse the use and use incidence of financial capital. The results showed that that age, education, processing experience and trainings attended were statistically significant in determining the use incidence of financial capital. It is therefore concluded that education coupled with further trainings and extension visit should be encouraged by processing stakeholders since they were discovered to be important determining factors in the use and use incidence of formal financial capital.**

Keywords: **Double Hurdle, Financial Capital, Use, Use Incidence and Processing Groups**

I. INTRODUCTION

Virtually all cassava produced in Africa is used for human consumption. Seventy percent (70 %) of the amount consumed is first processed into a large variety of products such as paste, flour and chips, and then cooked into foods serving both rural and urban populations as a basic daily source of dietary energy [12]. Demand for cassava, according to [15] as food was expected to grow at an annual rate of 2.5% per year and the demand for cassava as livestock feed at 5%. In the former case, there are observations indicating that cassava is increasingly being adopted as an ingredient in the manufacture of convenient fast foods and snacks for urban consumers.

In several African countries, cassava is being more and more perceived not only as a food security crop, but also as a raw material for various types of industries. Indeed cassava can be converted into a large number of products ranging from traditional and novel food products, to livestock feeds, ethanol and starch and its numerous derivatives. In some countries, there are concerted efforts being initiated, sometimes with strong political support at the highest level. For example, special presidential initiatives on cassava exist in Nigeria and Ghana to make cassava and its products the engine for economic growth. The New Partnership for African Development (NEPAD) has also recognized cassava as a powerful poverty fighter in Africa and has recommended a Pan-African Cassava Initiative based on a broad-based strategy which emphasized better markets, better organization of producers for collective action, and better participation by the private sector investment [15].

Cassava also played and continues to play a remarkable role in the agricultural sector of Nigeria. Since its debut in the late 1600s on Portuguese trade ships from Brazil into Nigeria, it has gone from a minor to a major crop that accounts for between 40-50% of all calories consumed in Southern and Central Nigeria [13]. Nigeria is the world's largest producer of cassava. Its current production is estimated at 39 million metric tons and the country has consistently been ranked as the world's largest producer of cassava since 2005 [16], [7] and [1]. Cassava is a major staple food in Nigeria. A staple as defined by International Institute for Tropical Agriculture, [11] is one that is eaten regularly and which provides a large proportion of the population's energy and/or nutrients. Cassava serves this function as it is eaten (cooked) or in processed form. The Food and Agricultural Organization had earlier on [8] asserted that as a result of growing urbanization, cassava had become an essential part of the diet of more than 70 million Nigerians.

Smallholder agricultural and processing systems in Nigeria, like most developing nations, are characterized by a number of drawbacks including technical, institutional, and infrastructural and most especially, the lack of financial capital. This adversely affects the economic wellbeing and the livelihood outcomes of farm and processing families. Most processors find it impossible to get loans from the banks; the few that have the opportunity are limited because of the high interest rate. There is also the problem of income fluctuation in terms of measuring up to minimum standard of living which indirectly affects assets that can be used as collaterals among crops including cassava processors. Thus, the small-scale cassava processors are constrained by poor access to financial capital and so depend on savings from their low incomes**,** which limits opportunities for expansion [3].

As a result of the lack of collateral and/or financial capital history, most farmers and processors are bypassed not only by formal financial capital providers (commercial banks, microfinance banks, agricultural banks and cooperatives) but also in some cases, by informal financial capital providers (friends, relatives, etc.). In the absence of inadequate access to financial capital and in addition to own sources, processors thus rely on their savings and money lenders (for their financial capital). No doubt the achievement of research institutions, governmental and non-governmental organizations in ensuring increased shelf life of cassava products through processing and in effect in ensuring improved livelihood of cassava processors is commendable. However, inadequate financial capabilities of the processors leading to insufficient access to processing inputs are raising a lot of appreciable concerns among processing stakeholders. There is therefore the need to actually examine the factors that are responsible for the use and use incidence of financial capital among cassava processors.

II. EMPIRICAL REVIEW

A couple of studies on cassava processing methods, their efficiencies and profitabilities exist. There are also studies which have assessed the impact of cassava processing on livelihood outcomes of the processors. In a study of the impact of cassava processing on the livelihoods of women processors in Central Gonja district of the northern region of Ghana, [19] found that inadequate funds and storage facilities, low price of processed products, poor packaging materials and health hazards constituted the challenges faced by the processors. The study concluded that cassava processing was profitable and contributed significantly to the standards of living of women. However, the challenges which the processors encountered could drastically reduce the level of processing and economic returns enhancing the standards of living of the processors could also be affected.

In another development, [16] estimated the contribution of the Cassava: Adding Value for Africa (C: AVA) project to income generation in Nigeria, using as a case study, the cassava farmers and processors in Ewekoro area of Ogun State. This study was about the effects of Cassava: Adding Value for Africa (C:AVA) project on cassava farmers and processors in the Ewekoro area of Ogun State, Nigeria. Respondents for the study were selected from five groups of processors targeted by the project in the area. The study concluded that the TME 491 cassava stems distributed to farmers had potential to increase farmers output but the quantity distributed to them was insufficient, the stem cuttings distributed to farmers did not result in acquisition of new assets, the processing equipment had increased the volume of cassava processed and reduced their cost.

[1] Studied the awareness and adoption of improved cassava varieties and processing technologies in Nigeria. They observed that the development of high-yielding and disease resistant cassava varieties, coupled with the promotion of efficient processing technologies, was the principal intervention aimed at changing the cassava sub-sector in Nigeria. The results showed that in all the study sites farmers grow mixture of improved and local cassava varieties. They processed cassava at home using small processing machines and also using services of commercial processors. The most common processed cassava products were found to be garri and fufu. Adopters of improved cassava varieties have higher cassava yield of 16 tons/ha compared to 11 ton/ha for non-adopters. There was also significant yield variation between villages that participated (15 tons/ha) in Research for Development (R4D) training and those which did not (13 tons/ha). The bivariate probit model estimates showed a strong relationship between adoption of improved cassava varieties and farmers access to grating machines. Moreover, farmers that were members of either community organizations or cooperative organizations had a higher tendency of using improved varieties than others, suggesting that the introduction of new cassava varieties would be enhanced by farmers' access to processing facilities and services. Moreover, training of farmers and processors through R4D programs has led to increased use of improved technologies.

[14], carried out a study to examine returns to cassava processing in Kwara State. They observed that majority of the processors were females with one form of education or the other. Their study revealed that processing cassava was profitable. Furthermore, they stated that the constraints experienced by processors in carrying out their activities and marketing their various products included poor road network, high transport cost, drudgery due to poor access to equipment, inadequate capital and weather related factors relating to sun-drying of cassava products during rainy season of various degrees. They recommended the need for processors to have access to infrastructural facilities and improved processing technology to enable them take advantage of the emerging market-oriented cassava products so as to improve their means of livelihoods. [18], reviewed recent development in cassava-based product research. Biofuel production, starch production and industrial utilization of cassava starch were treated. Similarly, glucose production and animal feed from cassava were reviewed. They highlighted that the production of High Quality Cassava Flour (HQCF) and their derivatives as well as iodine supplementation and protein enrichment of cassava products were of great importance. Their research attention on cassava-based products has high potential for industrialization.

III. REVIEW OF ANALYTICAL TECHNIQUES

Double-hurdle model

The double-hurdle model introduced by [5], has been frequently used to model two-stage decision processes, e.g. effects of regressors on the choice to use or not to use a technology, in this case, financial capital. Other models which can also be used for two-stage decision process include the univariate Tobit model. However, an advantage of the double-hurdle model compared with the standard univariate Tobit model is that it provides a more flexible framework to model

the observed consumer's behaviour as a joint choice of two decisions instead of a single decision. In effect, it can allow for the investigation of financial capital use and intensity of use having the same set of determinants (processors' socio-economic and environmental as well as credit institution characteristics). As the model's name suggests, two hurdles must be crossed for the use and the intensity of use (financial capital in this case). The "first hurdle" needs to be crossed in order to use financial capital. Given that there is seldom a processor who does not use one form of financial capital or the other, their current circumstances then dictate whether or not the households do in fact decide to use financial capital and if so, the intensity of use - this is the second hurdle. The double hurdle model contains two equations. These as discussed as follows:

The first hurdle is represented by:

$$d_i^* = Z_i^{'} \propto + u_i \quad (1)$$

$$y^* = X_i^{'}\beta + v_i \quad (2)$$

$$\begin{pmatrix}\varepsilon\\ \mu\end{pmatrix} \sim N\left[\begin{pmatrix}0\\0\end{pmatrix}, \begin{pmatrix}1 & 0\\ 0 & \sigma^2\end{pmatrix}\right]$$

Note from the diagonality of the covariance matrix that the two error terms are assumed to be independently distributed. The first hurdle is then represented by:

$$d_i = 1 \; if \; d^* > 0 \quad (3)$$

$$d_i = 0 \; if \; d^* \leq 0 \quad (4)$$

The second hurdle closely resembles the Tobit model (Poisson: financial capital intensity of use):

$$y^* = \max(y_i^{**}, 0) \quad (5)$$

Finally, the observed variable, y_i , is determined by the interaction of both hurdles as follows:

$$y = d_i y_i^* \quad (6)$$

The error terms are distributed as follows:

$$u_i \sim N(0,1)$$

$$v_i \sim N(0, \sigma^2)$$

The double-hurdle model considers the possibility of zero outcomes in the second-hurdle arising from the individuals' deliberate choices or random circumstances. The model assumes that zero values can be reported in both decision stages. The zeros reported in the first-stage arise from zero access to credit by cassava processors; and those in the second hurdle come from zero use intensity due to processors' deliberate decision or random circumstances.

In this study, the model was used to examine the use of financial capital by the cassava processors. The first hurdle assumes a Probit model, the coefficient of which describes the factors influencing the use of financial capital. The second hurdles in this study was formulated such that the determinants of use and use incidence are separately estimated using the Poisson model formulations.

The Poisson Regression model

The model is based on the assumption that the count dependent (financial capital use incidence) variable y_i, given the vector of explanatory variables $\boldsymbol{X_i}$, is independently Poisson distributed with density

$$f(y_i|\boldsymbol{X_i}) = \frac{e^{\mu_i}\mu_i{}^{y_i}}{y_i!}, \; y_i = 0, 1, 2, \ldots \quad (7)$$

With exponential mean function

$$\mu_i = exp(\boldsymbol{X_i}\boldsymbol{\beta}), \mu_i \geq 0, \quad (8)$$

Where β is a *K x 1* parameter vector. The choice of the exponential mean function is made to insure a non-negative mean. The model implies that the conditional mean and the conditional variance are equal, i.e. $E(y_i|\boldsymbol{X_i}) = V(y_i|\boldsymbol{X_i}) = \mu_i \geq 0,$ Note that the Poisson regression model is intrinsically heteroskedastic. A number of estimators (e.g. [4]) can be used to obtain estimates of β e.g maximum likelihood (ML) and pseudo maximum likelihood (PML). For a sample of *K* observations, the log-likelihood function for the Poisson regression model is given by

$$l = \sum_{i-1}^{k} \ln f \; \{y_i|x_i\} = \sum_{i=1}^{k} y_i x_i \beta - exp(x_i\beta) - lnyi! \quad (9)$$

The ML estimator is consistent and asymptotically normally distributed if the data generating process is Poisson. The assumption of correct underlying distribution may, however, be relaxed. This leads to a class of pseudo- and quasi-ML estimators [9]. The robustness of these estimators depends on a correctly specified conditional mean function.

In this study, the model was used to identify the factors influencing the use incidence of financial capital among cassava processors.

IV. METHODOLOGY

The study was carried out in Ogun and Oyo States, South Western Nigeria. A multi-stage sampling technique was used in selecting the respondents (cassava processors). The final sample size was five hundred and forty (540). Data on five hundred and thirty five (535) respondents were used in the analysis and the remaining five (5) copies of questionnaire were dropped due to inappropriate or incomplete responses.

A Double-Hurdle Model of Financial Capital Use and Use Incidence among the two processing groups of financial capital users (pooled sample).

Model Specification: Model Specifications as described for each objective are as follows:

To identify the factors influencing the use and use incidence of financial capital among the two processing groups of financial capital users in the study area, double hurdle model was used.

1. The first hurdle captures the decision to use financial capital (Probit Model)
2. the second hurdle captures use incidence (Poisson model).

Y_i = Financial capital use situation = 1 for formal financial capital and 0 = for Informal financial use

Covariates

X_1= Age of respondent, X_2= size of enterprise (₦), X_3 = Marital status, X_4= Processing experience, X_5= number of family labour employed, X_6= Total years of education, X_7= Number of hired labour, X_8= ownership structure, X_9 = Total number of households, X_{10}= Production cost, X_{11} = extension visits (dummy), X_{12} = initial capital

V. RESULT AND DISCUSSIONS (POOLED SAMPLE)

The double-hurdle model was used to analyse the determinants of both financial capital use and use incidence of financial capital (formal and informal) among cassava processing households in the study area. This model was chosen because it assumes that households make two sequential decisions with regard to financial capital. Each hurdle is conditioned by the processor's socio-economic characteristics and financial capital-specific attributes. In estimating the double-hurdle model, a Probit regression (using all observations) is followed by a truncated regression (Poisson) on the non-zero observations [5]. Table 1 presents the maximum likelihood estimates of the double-hurdle model for the factors that determine the use and use incidence of financial capital. The log likelihood ratio (LR) and the information criteria attest to the reliability of the model. This implies that factors that influence the two-stage decision relating to the use and use incidence of financial capital in the study areas can well be expressed in the double hurdle model. Coefficients in the first hurdle indicate how a given decision variable affects the likelihood (probability determinants of likelihood of use) to use financial capital between the two processing groups of financial capital users. Those in the second hurdle indicate how decision variables influence the use incidence (Poisson) between the two processing groups of financial capital users.

The result of the first hurdle (Probit Model) indicates that age, initial capital and enterprise size were statistically significant decision variables that influenced the probability to use financial capital among processing households in the study areas in the use and use incidence combinations. The marginal effects of the Probit model show changes in the probability of use of financial capital for additional unit increase in the independent or decision variables. The probability of use reduces by 0.020% for every member increase in the age of the processors. This implies that, as the processors grow older, the probability of use of financial capital reduces. The result satisfies *a priori* expectation; because the older a processors becomes there is likelihood that the willingness to use financial capital decreases with increase in age of the processors. The result is consistent with the findings of [10]. Initial capital was hypothesized to affect financial capital positively since it increases the capacity of processing households to acquire necessary inputs on processing enterprise. In this study, in conformity with the apriori, initial capital positively and significantly affected the use of financial capital at 10% level of significance. The result is consistent with the findings of [17] and [10]. The result also indicated that processing households who increase their initial capital have the 15.1% likelihood to use financial capital. The result also revealed that enterprise size increases the probability of use of financial capital by 26%. The result suggests that the size of the enterprise has the probability of increasing the use of financial capital.

The result of the poison model (use incidence) reveal that age, education, processing experience and trainings attended were statistically significant decision variables that influence the use incidence of financial capital by cassava processors in the study areas. An increase in the age of cassava processors decreases the number/types of financial capital used by 0.64 percent. This could be due to the fact that as the processors grow older, the probability of use of financial capital reduces. Education positively determines the use incidence of financial capital in the study areas. An increase in education attainment by the processors increases the use incidence of financial capital by 0.06%. The coefficient of trainings attended was positive and statistically significant at 5%. This implies that an increase in exposure by the processors as a result of trainings attended increases the use incidence of financial capital by 0.2%. The result indicated that the training has the tendency of creating more awareness and better information to the processing household [2].

Table 1: Maximum likelihood estimates of Double Hurdle models for financial capital use and use incidence among cassava processors in the study areas

	Coefficients	Standard Error	Marginal Effects	**p-value**
First Hurdle: Financial Capital				
Age	-0.00241	0.00926	0.794	0.794
Age^2	-0.000199	0.0000882	0.024**	0.024**
Processing experience	0.00475	0.00889	0.593	0.593
Initial capital	0.151	0.0815	0.063*	0.063*
Years spent in school	-0.0376	0.158	0.812	0.812
Enterprise size	0.260	0.131	0.047**	0.047**
Constant	-0.546	0.935		0.559
Second hurdle (Use incidence)				
Age	-0.00642	0.00369		0.082*
Years spent in school	0.003009	0.00178		0.091*
Processing experience	0.000642	0.00110		0.060*
Extension visit	0.000624	0.00226		0.783
Training attended	0.00286	0.00127		0.025**
Constant	0.0194	0.138		0.158
sigma				
constant	0.00556	0.000767		0.000
Log likelihood	558.09737			

, **, and * = 10%, 5% and 1% significant levels respectively*

Double-Hurdle Model of Financial Capital Use and Use Incidence among Cassava processors (Sub-sample of formal Financial Capital users)

The results on Table 2 revealed the double hurdle results of the sub-samples of the formal financial capital use (commercial bank, microfinance bank and cooperative). From the table, the result of the first hurdle (Probit Model) indicates that initial capital and education were statistically significant decision variables that influenced the probability to use formal financial capital among processors in the study areas. The probability of use increases by 28.9% and 34.25% for commercial bank and microfinance bank usage respectively for every additional increase in the initial capital of the processors.

This implies that, the higher the capital base of the processors the greater the probability of use of formal financial capital. The financial capital providers could readily assist the processors with funds. Education was hypothesized to affect financial capital positively since it increases the capacity of processing households to acquire information and knowledge on financial capital and promotes the decision to use it on his/her processing business. In this study, in conformity with the apriori, education positively and significantly affected the probability of use of commercial bank, microfinance bank and cooperative at 10%, 5% levels of significance respectively. The result is consistent with the findings of [10]. The model result indicated that processing households who increase their formal education by one year will increase the probability of use of financial capital by 23.96%, 15.76% and 22.96% for commercial bank, microfinance and cooperative respectively.

The result of the Poison model (use incidence) reveals that processing experience was statistically significant decision variable that influences the use incidence of formal financial capital by cassava processors in the study areas. An increase in the years of experience by the processor increases use incidence of formal financial capital by 0.05%. The result indicated that experience has the tendency in sensitizing the processing household on the importance of usage of formal financial capital.

Table 2: Double Hurdle Sub-Sample Results of Formal Financial Capital users: Use incidence

	Commercial Bank			Microfinance Bank			Cooperative		
	Coef.	**S E**	**p-value**	**Coef.**	**S E**	**p-value**	**Coef.**	**S E**	**p-value**
First Hurdle: Formal Financial Capital									
Age	-0.00345	0.01203	0.774	-0.0066	0.0142	0.640	-0.00082	0.0132	0.951
Age^2	-0.00230	0.00012	0.014	-0.00040	0.000145	0.007	-0.00029	0.00013	0.027
Processing experience	-0.00883	0.0134	0511	-0.00257	0.00287	0.420	-0.0111	0.0144	0.438
Initial capital	0.2887	0.1180	0.014**	0.3425	0.1465	0.018**	0.2056	0.1259	0.102
Years spent in school	0.2396	0.2192	0.074*	0.1576	0.250	0.028**	0.2293	0.2474	0.054**
Enterprise size	-0.2532	0.1749	0.148	-0.403	0.2104	0.056	-0.1730	0.1900	0.363
Constant	-1.9754	1.257	0.116	-1.793	1.532	0.242	-1.4190	1.339	0.289
Second hurdle (Use incidence of Formal Financial capital)									
Age	-0.00310	0.002335	0.184	-0.00257	0.00287	0.371	-0.0044	0.00262	0.095
Years spent in school	0.000156	0.00166	0.893	0.0008	0.0135	0.541	0.00033	0.0126	0.795
Processing experience	0.000522	0.000793	0.010*	0.00052	0.000931	0.073*	0.00043	0.000813	0.001***
Extension visit	0.00045	0.000923	0.765	0.00172	0.001853	0.353	0.000680	0.00150	0.650
Training attended	0.0000191	0.000923	0.984	0.00083	0.0011	0.437	0.00060	0.000986	0.543
Constant	0.01637	0.00882	0.064	0.0152	0.0107	0.156	0.0220	0.00988	0.026
Sigma									
Constant	0.00397	0.000394	0.000	0.0039	0.00045	0.000	0.00390	0.00041	0.000

*, **, and *** = 10%, 5% and 1% significant levels respectively

Double-Hurdle Model of Financial Capital Use and Use Incidence among Cassava processors (Sub-sample informal Financial Capital users)

The highlight of the results of the sub-sample of informal financial capital users on Table 3 revealed the double hurdle results of the sub-samples of the informal financial capital use ("Ajo", friends and relative, jewelry and sales of crops). From the table, the result of the first hurdle (Probit Model) indicated that processing experience was statistically significant decision variables that influenced the probability to use informal financial capital "Ajo" among processing households in the study areas. The probability of usage increases by 2.4% for "Ajo", for every additional increase in the experience of the processors. This implies that, as increase in the years of experience of the processors, the probability of usage of informal financial capital increases.

The result of the Poisson model revealed that processing experience was statistically significant decision variable that influence the informal financial capital use incidence by cassava processors in the study areas. The result shows that an increased in the years of processing experience by the processors increases the use incidence of informal financial capital in the study areas. Experience was hypothesized to affect informal financial capital use incidence positively since it increases the capacity of cassava processors to acquire information and knowledge on financial capital and promotes the decision to use it on his/her processing business based on years of experience. Also, in this study, in line with the apriori, processing experience positively and significantly affected the use incidence of "jewelry" as a means of informal financial capital.

Table 3: Double hurdle sub-sample results of Informal Financial Capital users: Use incidence

	Ajo			Friend/Relative			Jewelry			Crop Sale		
	Coef	**S E**	**p-value**	**Coef**	**S E**	**p-value**	**Coef**	**S E**	**p-value**	**Coef**	**S E**	**p-value**
First Hurdle: informal Financial Capital												
Age	-0.123	0.0157	0.431	-0.0136	0.176	0.439	-0.129	0.220	0.558	-0.00657	0.0206	0.975
Age^2	-0.00013	0.00013	0.332	1.93e-06	0.000156	0.990	0.000394	0.00154	0.798	0.000107	0.000169	0.527
Processing experience	0.0243	0.0128	0.058**	0.0221	0.1484	0.136	0.0937	0.156	0.549	0.02074	0.01585	0.191
Initial capital	-0.0506	0.125	0.685	-0.1476	0.1498	0.325	-0.1924	1.0332	0.852	-0.1158	0.1756	0.509
Years spent in school	-0.3931	0.2489	0.114	-0.1858	0.2973	0.532	-0.870	1.371	0.512	-0.00759	0.3303	0.982
Enterprise size	-0.2505	0.202	0.214	-0.1972	0.2384	0.408	-0.076	0.9096	0.933	-0.004259	0.2721	0.118
Constant	2.0511	1.583	0.195	2.228	1.826	0.222	7.9105	14.844	0.594	1.0229	2.0378	0.616
Second hurdle (Use incidence of informal Financial capital)												
Age	-0.00245	0.00282	0.385	-0.00315	0.00311	0.310	-0.00086	0.00277	0.756	-0.000615	0.00290	0.832
Years spent in school	0.000904	0.001156	0.434	0.00213	0.00143	0.137	0.00122	0.00127	0.333	0.000409	0.00120	0.732
Processing experience	0.00044	0.00076	0.564	0.000887	0.00098	0.365	0.00449	0.00158	0.005**	0.001124	0.00087	0.194
Extension visit	0.00089	0.0015	0.544	0.000849	0.00162	0.600				0.0000858	0.00137	0.950
Training attended	0.000386	0.00084	0.645	-0.00176	0.000967	0.855	-0.00045	0.00135	0742	-0.0004295	0.000963	0.656
Constant	0.00621	0.0108	0.565	0.00521	0.1152	0.651	-0.00176	0.0115	0.879	-0.0001696	0.0111	0.988
sigma												
constant	0.00246	0.00048	0.000	0.00242	0.000505	0.000	0.00109	0.000324	0.001	0.002043	0.000413	0.000

*, **, and *** = 10%, 5% and 1% significant levels respectively

VI. CONCLUSION

The result of the first hurdle (Probit Model) from the Double Hurdle model of financial capital use and use intensity indicates that age ($p<0.05$), education ($p<0.1$) and experience ($p<0.1$) were statistically significant decision variables that influenced the probability to use financial capital among cassava processors in the study areas (the two processing groups of financial capital users). The marginal effects of the Probit model show changes in the probability of use of financial capital for additional unit increase in the independent or decision variables. The second hurdle (truncated model) result revealed that age ($p<0.05$), education ($p<0.1$), marital status ($p<0.1$) and extension visit ($p<0.1$) were statistically significant decision variables that influence the financial capital use intensity by the processors in the study areas. To analyze the use incidence of financial capital by the processors, Double Hurdle model was also used. The result of the first hurdle (Probit Model) indicated that age ($p<0.05$), initial capital ($p<0.1$) and enterprise size ($p<0.05$) were statistically significant decision variables. The result of the poison (truncated) model revealed that age ($p<0.1$), education ($p<0.1$), processing experience ($p<0.1$) and trainings attended ($p<0.05$) were statistically significant decision variables that influence the financial capital use incidence by cassava processors in the study areas.

In conclusion, policies for rural development in several countries, and in particular Nigeria, lay strong emphasis on providing financial capital to farmers and processors, since this is thought to play a crucial role in the agricultural cycle, enabling farmers and processors to purchase key inputs and thus increase their income, more food secured, reduces the poverty level and other outcomes over time. Hence, all the factors that ensure the use (age of the processors, education, initial capital and processing experience) and use incidence (initial capital and enterprise size) should be encouraged.

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