NEXUS BETWEEN INTERNAL VALUE CHAIN FINANCE AND COCOA PRODUCTION IN SOUTHWESTERN NIGERIA: IMPETUS TO AGRICULTURAL PRODUCTIVITY AND SUSTAINABILITY

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ABSTRACT

In view of the fact that securing loan for agriculture in financial institutions has become difficult as a result of the inability of small holder farmers to provide collateral securities, the Internal Value Chain Finance (IVCF) which takes place within the value chain is increasingly becoming the major source of finance in cocoa production. The study was carried out in Southwestern part of Nigeria. The study described the socio-economic characteristics of the cocoa farmers and IVCF; identified the sources of IVCF; examined the conditions that impact on the borrower and lender; and appraised the prospects and challenges of IVCF. Data were collected from 120 cocoa farmers through the use of interview schedule. Data analysis was carried out using frequency counts, percentages, mean, standard deviation and probit regression model. Contrary to popular opinions that farmers' main sources of finance were cooperatives and commercial banks, the study revealed that the major source of financing cocoa production in the study area is IVCF such as cocoa merchants or input supplier which provide credit to known producers and lead firm funds advances to market intermediaries. Furthermore, respondents claimed that the credit granted to them was flexible in terms of ease of repayment; interest free, accessibility and timeliness. The main prospect of the IVCF was that cocoa farmers have access to loan which enhances increased production and sustainable income. The problems facing IVCF include lack of transparency on the part of farmers, cocoa merchants and input suppliers and high risks related to uncontrollable factors such as global price fluctuations and natural disasters. There is need for extension agency and policymakers to train the farmers on the procedures of obtaining loans from lenders and provide reliable information on IVCF functioning, success factors and results. Lenders should also assess the credit-worthiness of the specific borrowers before giving out loans.

Keywords: Finance, Cocoa farmers, accessibility nexus, productivity, sustainability, value chain

INTRODUCTION

One of the most important crops that contributed to increase in Gross Domestic Product in Nigeria is cocoa (*Theobroma cacao*). It remains, however, significant in terms of internally generated revenue, and at the grower level it's important in terms of employment and income. Cocoa, a plantation crop, was the dominant foreign exchange earner from the early 1960s through the 1970s (Olujide and Adeogun, 2006). The contribution of the cocoa sub-sector to Nigeria's total agricultural export earnings averaged 70.6% between 1971 and 1975, 89.8% between 1976 and 1980, 84.6% between 1985 and 1987, 76.8% between 1986 and 1990, and 53.3% between 1992 and 1996. Nigeria's cocoa production has dropped further by 5.2 per cent from 248,000 metric tonnes in the 2013/2014 planting season to 235,000 metric tonnes in the 2014/2015 season(Maureen 2016), The fall in

percentage share of agriculture especially cocoa output may be attributable to reasons as noted by Amos (2007) to include the negligence of the agricultural sector by the past administrations due to the discovery of the petroleum resources that now account for the enormity of foreign exchange earnings. Other problems include the vacuum created by the abolition of the Nigerian Cocoa Marketing Board (NCMB), old age of the farmers, massive migration from rural areas to urban areas, scarcity and high cost of agricultural labour, incidence of pests and diseases, inadequate credit facilities to cocoa farmers and indiscriminate bush burning that has been affecting cocoa plantations (Akinnagbe and Ajayi 2010).

It has been emphasized by many researchers that one of the major problems that face cocoa production in Nigeria is inadequate access to credit facilities which prevented many farmers from adopting improved practices, since many of them lack the collateral needed to secure loan or credit from financial institutions (Asogwa, Abu and Ochoche, 2014; Akinnagbe and Ajayi,2010 Lawal *et al* 2009) . It hampers productivity and income of rural smallholder farmers and resulted in low acreages under cultivation, poor farm maintenance practices, inadequate or no fertilizer application which eventually led to poor yields and low income for the rural farmer (Asiedu-Mantey, 2011; Akinnagbe, 2015). Lack of credit is also attributed to the uncertainty in farm input and output and the time lag between input and output. Thus until harvest time, farmers have difficulty meeting basic household demands (Rahji & Adeoti, 2010).

In an attempt to address the issue of financing agriculture faced by farmers especially cocoa farmers, governments at different levels in the country resorted to establishment of credit institutions such as Rural banking through the commercial banks, Nigerian Agricultural and Rural Development Bank (NARDB) now known as Bank of Agriculture, (BOA), Agricultural Credit Guarantee Scheme (ACGS) for purpose of making credit acquisition accessible to farmers. Despite all these efforts, agricultural credit available to rural farmers, producers, especially smallholders, are still inadequate. Furthermore, the result might be attributed to the procedures involved in obtaining such credit facilities. According to a survey conducted in Nigeria in 2008 by a development finance organization, Enhancing Financial Innovation and Access (EFIA) (2008) report, 23% of the adult population in Nigeria has access to formal financial institutions, 24% to informal financial services, while 53% are financially excluded (Central bank of Nigeria 2016).

In order to escape these difficulties Value Chain Finance (VCF) comes to play. VCF is any or all of the financial services, products and support services flowing to and/or through a value chain (Miller and Jones 2010). The role of value chain finance is to address the needs and constraints of those involved in that chain. VCF could either be Internal Value Chain IVCF which is the internal financing directly from one value chain actor to another or External Value Chain Finance (EVCF) which is finance from a financial institution or investor based upon the borrower's value chain relations and activities. For the purpose of this study effort was concentrated on IVCF. In IVCF, traders commonly provide finance to

farmers for harvest, inputs or other needs both related to the agricultural chain or household during the production cycles in which farmers will pay back from the proceeds. As agriculture and agribusiness modernize with increased integration and interdependent relationships, the opportunity and the need for value chain finance becomes increasingly relevant. Thus, the study assessed nexus between internal value chain finance and cocoa production in southwestern Nigeria and its effect on agricultural productivity and sustainability in Nigeria.

Objectives of the Study

The objectives of the study include: description of the socio-economic characteristics of the cocoa farmers; identification of the sources of IVCF; examination of farmers' knowledge of the conditions that impact on the borrower and lender; appraisal of the benefits and challenges of IVCF and determinants of accessibility to credit facilities in IVCF.

METHODOLOGY

Three states, namely Osun, Ondo and Ekiti States were purposively sampled for the study because of their significant contributions to cacao production in Nigeria and being the major cocoa producing states in Southwestern Nigeria. Multistage sampling procedure was employed to select the respondents from the three states. At the first stage, a ratio 2:2:1 was used to purposively select 5 Local Government Areas (LGAs) in the three states due to level of cacao production in each state. This implies that two LGAs were selected in Ondo and Osun States respectively, while one LGA was selected in Ekiti State. At the second stage, two communities were randomly selected from each of the five LGAs based on the list of cacao producing communities collected from the agricultural officers in the local government headquarters giving a total of 10 communities. At the third stage, 12 cacao farmers that have accessed credit through IVCF were selected from each of the 10 communities using simple random sampling technique making a total of 120 respondents.

Structured interview schedule was used to collect relevant quantitative data. Descriptive statistics such as percentages, mean and standard deviation were used to summarize the data. Probit regression model was used to draw inferences from the hypotheses. To determine the perceived level of benefits of IVCF, a list of possible benefits such as flexible and timely access to credit by the borrowers, increased income, opportunity to expand production, etc), was given on a 5–point Likert-type scale with five response options (4 = to a great extent; 3 = to some extent; 2 = to a little extent; 1 = to a very little extent; 0 = No extent). Also, constraints associated with IVCF were measured on five point likert scale (4 = to a great extent; 3 = to some extent; 2 = to a little extent; 1 = to a very little extent; 0 = No extent). Mean was used to rank the perceived benefit derived from IVCF in descending other of their importance.

RESULTS AND DISCUSSION

Result in Table 1 show that above half (54.2%) of the respondents in selected States were between the ages of 41and 60 years. The mean age of respondents was 48

with standard deviation of 16.7. The implication of these findings is that cocoa farmers in the three states were fairly old people. Majority (82.5%) of the farmers were males. This observation is expected because of the involvement of women in other activities like planting of arable crops, processing and trading. It may also be attributed to the tenure system where female right to land ownership is limited. Furthermore, 42.5% had formal education up to primary school level while 20 percent have never been to school. The average number of years spent in school was 5.3 with standard deviations of 2.1. The low level of education may have adverse effect on farmer's knowledge of documentation of loan secured and record keeping. The majority of the cocoa farmers in Southwestern Nigeria (80.0%) had between 1 and 10 hectares of farm land. This implies that cocoa farmers in the study areas were smallholders. The implication drawn was based on the criteria set by Olayide and Ogunfiditimi (1980), that all farmers who operate on land less than 11 hectares are small-scale farmers. The small size of the farm might have negative effect on the income available to farmers in which additional credit facilities might be required for production activities.

Results in Table 1 also show that mean income realized annually was N100, 231 with standard deviation of 30,346 on their farms annually. The findings reveal that cocoa farmers have more income which might be due to increase in price of cocoa in the international market. It would be expected that farmers with high income should be able to save for future farming activities. However, majority of the farmers still borrow to finance their farming operations. Detailed analyses showed that majority of cocoa farmers (55.0%) got information about production activities and market from other farmers. Others include extension agents, sales agents, and cocoa merchants. Other farmers were major source of information while 42.3% had no contact with extension agents with which to discuss issues of improved cocoa production and finance in the last one year. This showed that cocoa farmers were rarely visited by extension agents and majority had it less than 5 times extension contact in a year. The implication of the finding is that majority of the farmers might not be exposed to formal ways of documenting credit facilities secured through IVCF. This was corroborated by Williams (1984), who found that there are many farmers in Nigeria that have not been reached by extension agents and are therefore not exposed to new technology in agriculture.

Table 1. Distribution of cocoa farmers according to socio-economic characteristics

N=120

Socio-economic characteristics	Frequency	Percentage	Mean/ (STD)
Age (year)			
Below 30	19	15.8	
31 – 60	75	62.5	48.4.0 (16.7)
61and above	26	21.7	
Sex			
Male	99	82.5	
Female	21	17.5	
Year of schooling			
Never	24	20.0	
1-6	51	42.5	5.3(2.1)
7-12	32	26.7	
13 and above	13	10.8	
Farm size(hectare)			
≤5	53	44.2	
6-10	43	35.8	5.1(2.4)
≥11	24	20.0	
***Source of information**			
Other farmers	66	55.0	
Extension Agents	45	37.5	
Radio and television	38	31.7	
Non-Governmental Ogranisations	35	26.7	
Newspaper	21	20.0	
Income /annum			
≤ 50,000	32	26.7	
51,000-100,000	30	25.0	₦100, 231 (30,346)
>100,000	58	48.3	
Extension contact in the last one year			
Never	50	41.7	
1-5	19	40.0	3.6(1.2)
≥ 6	5	18.3	

Source: field survey 2015 * Multiple responses

It is a known fact that increases in finance and investment is needed at all levels of the value chain. The results in Table 2 shows that for a fair majority (67.5%) of the respondents, their main source of finance in IVCF was the cocoa sales agents from which they collected both cash and inputs followed by inputs sale supplier(54.2%), cocoa beans exporters(4.2%) and cocoa processing firm(2.5%). This is an indication that cocoa farmers relied mostly on cocoa sales agents for their financial needs especially during the off seasons and for farming operations.

Other sources of finance outside the IVCF include friends and relatives (51.7%), farmers' cooperative society (45.0%), personal savings (45.8) and money lenders. The study revealed that finance houses such as commercial banks which were supposed to be more reliable were not readily accessible to the farmers and this might have pushed them out to source for loan from money lenders that charged exorbitant interest rate and at times use their farms as collateral security which could be confiscated if they were unable to pay. This finding was supported by Miller

and Jones (2010) assertion that commercial banks have traditionally shied away from the agricultural sector because of uncontrollable and systemic risks, higher costs and fear of the unknown for bankers not familiar with the sector. Furthermore, credit facilities from commercial banks required collateral security which is used to mitigate risks to the lender but the typical mortgage type of collateral commonly required by the banks is often not available or feasible in rural areas. More so, Microfinance that was established in order to finance small scales business charged high interest with short-term loan products that are generally not able to address the full range of agricultural needs.

Table 2 Sources of finance for coca production within and outside the IVCF

Sources of finance within IVCF	**Frequency**	**Percentage**
Cocoa sales agents	81	67.5
Inputs suppliers	65	54.2
Cocoa beans exporters	5	4.2
Cocoa processing firm	3	2.5
***Sources of finance outside the IVCF**		
Friends and relatives	62	51.7
Personal savings	55	45.8
Framer's cooperative society	54	45.0
Money lender	54	45.0
Microfinance bank	34	28.3
Nigeria Agricultural and cooperative and rural development bank(NACRDB)	29	24.2
Commercial bank	15	12.5

Source: field survey, 2015 *Multiple responses

Table 3 showed that the grand mean knowledge score of the respondents on improved conditions of sourcing credit through IVCF was 2.2. The individual mean knowledge scores were ranked in descending order. Knowledge about documentation of the lending agreement on the credit secured was ranked first with mean score of 2.1. This was followed by proper record on the usage of the loan (mean=1.8) and contract enforcement (1.6) while improved policies and regulation for IVCF came last (Mean=1.5). In general, the results show that when the individual mean scores are compared with the grand mean score, cocoa farmers in southwestern Nigeria had a low knowledge of all the improved methods of securing and repayment of credit facilities.

Table 3: Cocoa farmers' knowledge of improved conditions of lending and repayment in IVCF

Improved methods of lending and repayment in IVCF	Mean	Rank
Documentation of the lending agreement on the loan secured(use of contractual agreements)	2.1	1st
Proper record on the usage of the loan(labour employed agricultural inputs used output and income)	1.8	2nd
Contract enforcement	1.6	3rd
improved policies and regulation for some of the value chain finance instruments	1.5	4th

Source: field survey 2015 Grand mean score=2.2

Results in Table 4 show that the grand mean score of benefit derived from securing finance in IVCF was 2.5. The benefit was rated in descending order. The opinion that accessibility to credit in IVCF can lead to sustainable income was ranked first with mean score of 3.47 and flexible and timely access to credit by the borrowers was ranked next (Mean=3.48). However, opinion statements such as IVCF helps to consolidate the value chain linkage among participants in the chain (mean=2.2) was ranked least.

Generally, respondents were of the opinion that securing credit through IVCF benefited them tremendously in term of increase in income and yield. The implication of this finding is that if credit facilities secured through IVCF can be formalized, it might lead to increase in cocoa production. The findings is in line with African Development Bank (2013) report that Agricultural Value Chain Finance(AVCF) offers an opportunity to expand the financing space for agriculture by improving efficiency, ensuring repayments, and consolidating value chain linkages among participants in the chain.

Table 4: Benefits of securing credit through IVCF

Statement of opinion	Mean	Rank
Accessibility to credit in IVCF can lead to sustainable income	3.74	1st
Flexible and timely access to credit by the borrowers	3.48	2nd
IVCF offers an opportunity to expand production	3.30	3rd
Provision of collateral security not is a necessary perquisite for collection of credit	3.28	4th
It improve your saving	3.16	5th
The pay back method is easy	2.50	6th
It help to consolidate the value chain linkage among participants in the chain	2.20	7th

Source: field survey, 2015 Grand mean score=2.5

Analysis of results in Table 5 shows that the grand mean score of constraints to securing finance from in IVCF was 2.5. The results show that lack of transparency on the part of the lender (Cocoa sale agents and input suppliers (Mean=3.4) and the farmers (mean=3.00) were the most severe constraints to accessing credit facilities in

the IVCF. Problems such as lower bargaining power in determining the sales price (mean=2.33) and procedure of securing the credit and payment methods being cumbersome (mean=2.33) were not so severe. The finding from the study indicated that accessing credit through IVCF face with a lot of constraints which might have negative effect on their accessibility to credit facilities. This finding corroborated the findings of Afolabi (2010), Oke et al (2007) and Balogun and Alimi (1988) that high default rate among farmers in Southwestern Nigeria crippled the agricultural credit programme

Table 5 Constraints to provision of credit under value chain finance among cocoa farmers

Statements of opinion	Mean	Rank
Lack of transparency on the part of lender(sale agent and inputs suppliers	3.44	1st
Lack of transparency on the part of cocoa farmer on the willingness to back	3.00	2nd
High risks related to uncontrollable factor such as global price fluctuation	2.84	3rd
Natural disasters such as drought and excessive rainfall	2.81	4th
Inadequate market information	2.67	5th
Inadequate knowledge about recordkeeping	2.67	5th
Inadequate knowledge on improved method obtaining credit under IVCF (documentation)	2.64	7th
Misappropriation of credit soured from IVCF by cocoa farmers	2.59	8th
Lower bargaining power in determining the sales price	2.33	9th
Procedure of securing the credit and payment methods is cumbersome	2.33	10th

Source: field survey 2015 Grand mean score = 2.5

Probit regression model was employed in ascertaining a number of factors considered to be determinants of accessibility to credit facilities in IVCF. The analysis in Table 8 reveals that the coefficients of source of information, years of formal education, income and farm size were positively related to accessibility to credit in IVCF. Findings implied that the higher the year of formal education, income and farm size the higher the accessibility to credit facilities. This is because education, income and farms size enhances productivity through improved access to finance in value chain.

Table 6 Probit analysis showing determinants of accessibility to credit facilities in IVCF

Variables	t-values	Probit coefficient
Age	2.012	0.036*
Year of education	2.901	0.323**
Income of cocoa framers	1.006	0.829**
Farm size	1.142	0.253*
Source of information	2.721	0.426**
Extension contact	0.149	0.053*

*Coefficients significant at 5 percent, **Coefficients significant at 10 percent. Number of Observations = 120, Log-Likelihood = -0.0003461

CONCLUSION AND RECOMMENDATIONS

The study revealed that cocoa farmers accessed credit for cocoa production activities through internal value chain finance and that it was their most viable means of finance. Consequently, this will have multiple effects on cocoa production and sustainable income. Moreso, cocoa farmers had a low knowledge of all the improved methods of securing credit and repayment in IVCF. The problems to provision of finance under IVCF include lack of transparency on the part of farmers, cocoa merchants and input suppliers and high risks related to uncontrollable factors such as global price fluctuations and natural disasters. There is need for extension agency and policymakers to train the farmers on the procedures of obtaining loans from lenders and provide reliable information on IVCF functioning, success factors and results. Lenders should also assess the credit-worthiness of the specific borrowers before giving out loans. Furthermore, there is need for policy makers to create proper policies and procedures to address some common IVCF risks. The overall message is that internal value chain financing is recommended as a promising approach for financing agriculture at all levels of the agricultural value chain.

REFERENCES

African Development Bank. (2013) *Agricultural Value Chain Financing (AVCF) and Development for Enhanced Export Competitiveness* African Development Bank publication. P1-44.

Afolabi J.A. (2010). Analysis of Loan Repayment among Small Scale Farmers in Oyo State, Nigeria. J. Soc. Sci., 22(2): 115-119.

Akinnagbe O.M and Ajayi A.R. (2010)Assessment of farmer's Benefits Derived from Olam Organisatios sustainable Cocoa production Extension Activities in Ondo State, Nigeria. *Journal of Agricultural Extension* 14(1):11-21.

Akinnagbe O.M.(2015) Evaluation of Constraints to Implementation and Adoption of Cocoa Resuscitation Programmes in Southwest Nigeria

Applied Tropical Agriculture 20, (1): 42 - 47.

Amos T.T. (2007) An analysis of productivity and technical efficiency of smallholder cocoa farmers in Nigeria> Journal of Social Sciences 15(2): 127-133.

Asiedu-Mantey, E. 2011.Rural banking in Ghana. Combert Impressions Ltd.

Asogwa 1.O. Abu1 and G. E. Ochoche (2014)Analysis of Peasant Farmers' Access to Agricultural Credit in Benue State, Nigeria B. C. British Journal of Economics, Management & Trade British Journal of Economics, Management & Trade 4(10): 1525-1543, 2014

Balogun ED, Alimi A (1988). Loan Delinquency among small farmers in Developing Countries: A case study of the small-farmers credit programme in Lagos State, Nigeria. Economic and Financial Review, 26(3): 36-44.

Central Bank of Nigeria(2016) Financial Inclusion. Financial Inclusion Newsletter, A Quarterly Publication of the Financial Inclusion Secretariat, Central Bank of Nigeria. Retrieved from https//www.cbn.gov.ng/devfin/fininc.asp and accessed on 15/12/2016

Lawal,J.O, B.T, Ajani, O.I.Y and Oni,O.A,(2009) Determinants of Constraints to Credit Access among Cocoa Farming Households in Osun State, Nigeria. *Pakistan Journal of Social Sciences* 6(3):159-163

Maureen I.M (2016) Nigeria records 5.2% fall in cocoa production. Punch newspaper. Retrieved from punchng.com/Nigeria-record-5-2fall-in cocoa production/. Accessed on 01/08/2016

Miller C. And Jones L (2010) *Agricultural Finance :Tools and Lession* published by Food and Agricultural Organisation of the United Nation and Practical Action. 1-144

Oke J.T.O, Adeyemo R, Agbonlahor MU 2007. An empirical analysis of microcredit repayment in Southwestern Nigeria. Humanity Soc. Sci. J., 2(1): 63-74

Olayide S.O. and Ogunfiditimi T., (1980) "Agricultural Extension and Nigeria Small farmers'' In Olayide, et. al. (eds) Nigeria Most all the fsmall farmers problems and prospects of Rural development. Ibadan University press Ibadan 35-53.

Olujide, M.G and S.O. Adeogun (2006). Assessment of cocoa growers' farm management practices in Ondo State, Nigeria. *Spanish Journal Rahji M.A.Y and Adeoti A.A (2010)f Agricultural Research*, 4(2), 173-179

Rahji M.A.Y and Adeoti, A.A 2010 Determinants of Agricultural credit rationing by commercial Bank in Southern Nigeria. International Research Journal on Finance and Economics

Williams, S.K.T., Fenley, J.M., Williams,C.E.,(1984) A manual for Agricultural Extension Workers in Nigeria Department of Agricultural Extension; University of Ibadan, Nigeria, 25 -30.