Determinants of loan repayment among bank of agriculture loan beneficiaries in South East, Nigeria

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ABSTRACT

This study examined the determinants of loan repayment among beneficiaries of the Bank of Agriculture (BOA) in South-East Nigeria. Specifically, it described the socio-economic characteristics of beneficiaries, identified factors influencing loan repayment, and highlighted constraints militating against effective repayment. Primary data were obtained through structured questionnaires administered to 270 beneficiaries selected through a multi-stage sampling technique combining purposive and random procedures across Anambra, Enugu, and Imo States. Data were analyzed using descriptive statistics and an Ordinary Least Squares (OLS) regression model. Results indicated that 65.6% of beneficiaries were male and predominantly married, with a mean household size of six persons. Farming was the major occupation, with an average farm size of 1.5 hectares and a mean farming experience of 12 years. Regression results revealed that age, educational attainment, farm size, farming experience, farm income, distance to the bank, interest paid on loan, value of collateral, and loan amount significantly influenced loan repayment performance. Major financial constraints identified included high interest rates, delays in loan processing, untimely disbursement of approved loans, stringent collateral requirements, limited loan amounts, and short repayment periods. These challenges adversely affected beneficiaries' repayment capacity and overall loan performance. The study recommends that the Bank of Agriculture develop and implement an efficient loan disbursement framework to ensure timely release of funds, reduce loan diversion, and strengthen beneficiaries' capacity to meet repayment obligations.

Contribution/Originality: This study contributed to the existing literature on the determinants of loan repayment among BOA loan beneficiaries. It also addressed a methodological gap because such a study has not been conducted on BOA loan beneficiaries in the study area.

1. INTRODUCTION

The agricultural sector constitutes a key pillar of Nigeria's economy, providing essential goods such as food, raw materials for clothing, and resources for shelter while also serving as a major source of employment and livelihood, particularly in rural areas (FAO, 2022). The Nigerian agricultural sector is predominantly made up of smallholder farmers who operate on fragmented and widely dispersed plots of land, often with limited access to modern inputs,

technology, and infrastructure (International Fund for Agricultural Development, 2021). These farmers' productivity remains low due to inadequate use of yield-enhancing agricultural inputs, technologies, limited access to extension services, inadequate market linkages, and credit constraints, among others. Kehinde and Olatidoye (2020) asserted that a significant majority of smallholder cassava farmers were credit-constrained and that credit access was among the major sources of inefficiency. Similarly, Odoemenem and Obinne (2010) further asserted that smallholder farmers' productivity is hindered by limited access to credit facilities, as timely credit will help expand the scope of operation and adoption of innovative technologies, as well as enhance the purchase and use of some improved agricultural inputs.

The enormous importance of credit has attracted the attention of the Nigerian government, leading to the establishment of specialized institutions such as the Nigeria Agricultural and Cooperative Bank (NACB) in 1973, which was later renamed the Nigeria Agricultural Cooperative and Rural Development Bank (NACRDB). These institutions aim to cater to the credit needs of the agricultural sector, address financial constraints faced by rural farmers, and improve credit availability and accessibility through microcredit schemes.

However, despite the enormous importance of agricultural credit/loans in agricultural production, its acquisition and repayment face several constraints, especially among smallholder farmers (Awoke, 2004). Several studies have shown that a high rate of loan default among beneficiaries has become a major concern, mainly due to poor management procedures, loan diversion, and unwillingness to repay. Poor loan repayment performance threatens the sustainability of agricultural lending institutions, limits their ability to extend new loans, undermines stability, and ultimately hampers the development of the agricultural sector.

Although previous studies Oladeebo and Oladeebo (2008); Ume, Ezeano, and Obiekwe (2018), and Onyeagocha, Chidebelu, and Okorji (2012), have examined the determinants of loan repayment among smallholder farmers, their analyses generally treat farmers as a homogeneous group. As a result, the unique conditions, borrower characteristics, and institutional dynamics that shape repayment behavior within specific agricultural credit schemes remain largely underexplored.

In particular, there is a noticeable absence of empirical evidence on the factors influencing loan repayment, specifically among beneficiaries of the Bank of Agriculture (BOA), an institution that plays a central role in agricultural financing in the study area. Existing literature does not capture how BOA's lending structure, monitoring mechanisms, farmer characteristics, enterprise types, and contextual constraints jointly shape repayment outcomes.

2. METHODOLOGY

The study was conducted in the South-east Agro-ecological zone of Nigeria. The South-east zone lies between latitudes $4^0 10'$ and $7^0 8'$ North of the Equator and longitudes $5^0 30'$ and $9^0 27'$ East of the Greenwich Meridian. The South-east zone comprises five states: Abia, Anambra, Ebonyi, Enugu, and Imo. The zone is bounded in the east by Cross River and Akwa Ibom states, and in the west by Edo and Delta states. It is bounded in the south by Rivers state and in the north by Benue and Kogi states (Osuji, 2017). The population of the zone is about 32,952,778, which is 22.46% of Nigeria's total population (National Population Commission, 2016). The Southeast zone has a total land mass of 10,952,400 hectares and is among the country's densely settled areas, with an average population density of 247 persons per square kilometer, compared to the national average of 96 persons per square kilometer (National Population Commission, 2016). Imo, Anambra and Enugu states are among the most populous states in the zone and the zone is well known for a high level of agricultural and economic activities.

The multi-stage sampling procedure involving purposive and random sampling techniques was adopted in selecting respondents for this study. In the first stage, three states out of the five in the study area were purposively selected. The states were Anambra, Enugu, and Imo. The reason was that these states had the highest number of BOA outlets and the dominance of economic and agricultural activities.

In the second stage, a purposive sampling procedure was used to select nine (9) BOA outlets out of the twelve (12) from the three states selected. The reason was due to the volume of lending activities to smallholder farmers and the large volume of agricultural activities in the area. In Anambra State, Oko BOA outlet, Nteje BOA outlet, and Ukpo BOA outlet were selected. In Enugu State, Oji River BOA outlet, Nsukka BOA outlet, and Mgbowo BOA outlet were selected for the study. In Imo State, Orlu BOA outlet, Aboh Mbaise BOA outlet, and Atta BOA outlet were also selected. In the third stage, the compiled lists of loan beneficiaries from the selected BOAs in each state were obtained. The list was compiled by the loan officers of the BOAs. Afterward, a proportionate sampling technique was used to select 270 loan beneficiaries. The reason for the proportionate sampling is because the farmers who benefited from the selected BOAs in each state are not the same.

Data were collected from primary and secondary sources. Primary data were gathered through structured questionnaires administered to sampled BOA loan beneficiaries, while secondary data were obtained from literature such as textbooks, journals, and research reports.

Data were analyzed using descriptive statistics and the ordinary least squares multiple regression techniques. Descriptive statistics were used to analyze the socio-economic characteristics of the loan beneficiaries, while the ordinary least squares multiple regression technique was used to analyze the factors influencing the amount of loan repaid by beneficiaries, as specified implicitly.

$$Y = f\left(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}, X_{11}\right) \quad (1)$$

Where:

Y = Amount of loan repaid by the loan beneficiaries (₦).

X_1 = Age of respondents (Years).

X_2 = Educational attainment (Years).

X_3 = Household size (Number).

X_4 = Farm size (Hectare).

X_5 = Farming experience (Years).

X_6 = Farm income (₦).

X_7 = Distance to Bank (km).

X_8 = Membership of cooperative (1 = Member, 0 = no member).

X_9 = Interest rate amount paid on loan (₦).

X_{10} = Value of Collateral (₦).

X_{11} = Amount of loan obtained (₦).

The explicit form of the equation is expressed as:

$Y_i = bo + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots + b_{11}X_{11} + e_1$ .. Linear form

$Y_i = \log bo + b_1\log X_1 + b_2\log X_2 + b_3\log X_3 + b_4\log X_4 + \ldots\ldots\ldots + b_{11}\log X_{11} + e_1$ .. Semi log form

$\log Y_i = \log bo + b_1\log X_1 + b_2\log X_2 + b_3\log X_3 + b_4\log X_4 + \ldots\ldots + b_{11}\log X_{11} + e_1$ ..Cobb-Douglas

$\log Y_i = bo + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + \ldots + b_{11} X_{11} + e_1$ \ldots\ldots\ldots\ldots\ldots..Exponential form

Where:

bo = Constant.

$b_1 - b_{11}$ = Regression coefficients of X_1 - X_{11}.

e_1 = Stochastic error term.

It was expected a priori that the coefficient estimates for $b_3, b_4, b_5, b_6, b_8, b_9, X_{10}, X_{11} > 0$; and b_1, b_7 and $b_9 < 0$.

Four functional forms of the regression model, namely linear, exponential, double-log, and semi-log, were fitted to select the lead equation based on statistical and econometric criteria. The choice of the lead equation was based on the magnitude of the coefficients, conformity with a priori expectations of signs, explanatory power of the model (R^2), the significance of the regression parameters, and the F-statistic.

3. RESULTS AND DISCUSSION

3.1. Socio-Economic Characteristics of BOA Loan Beneficiaries in the Area

The results of the socioeconomic characteristics of the BOA loan beneficiaries are presented in Table 1.

Table 1. Socio-economic characteristics of the (BOA) loan beneficiaries in South East Nigeria.

Socio-economic characteristics	Pooled		Anambra state		Enugu state		Imo state	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Age of respondents								
30-39	60	22.2	25	27.8	15	16.7	20	22.2
40-49	95	35.2	34	37.8	34	37.8	27	30.0
50-59	87	32.2	26	28.9	31	34.4	30	33.3
60-69	28	10.4	5	5.6	10	11.1	13	14.4
Total	270	100.0	90	100.0	90	100.0	90	100.0
Mean	46.24		44.79		45.93		48.01	
Gender								
Female	93	34.4	29	32.2	36	40.0	28	31.1
Male	177	65.6	61	67.8	54	60.0	62	68.9
Household size								
1-3	63	23.3	25	27.8	18	20.0	20	22.2
4-6	155	57.4	53	58.9	61	67.8	41	45.6
>7	52	19.3	12	13.3	11	12.2	29	32.2
Total	270	100.0	90	100.0	90	100.0	90	100.0
Mean	5.56		5.32		5.8		5.57	
Major Occupation								
Farming	140	51.9	42	46.7	48	53.3	50	55.6
Trading	72	26.7	24	26.7	22	24.4	26	28.9
Civil Servant	49	18.1	21	23.3	15	16.7	13	14.4
Artisan	9	3.3	3	3.3	5	5.6	1	1.1
Total	270	100.0	90	100.0	90	100.0	90	100.0
Farm size								
≤ 0.5	24	8.9	12	13.3	11	12.2	1	1.1
0.6 - 1.0	81	30.0	38	42.2	20	22.2	23	25.6
1.1 - 1.5	71	26.3	19	21.1	27	30.0	25	27.8
1.6 - 2.0	56	20.7	12	13.3	23	25.6	21	23.3
2.1 - 2.5	38	14.1	9	10.0	9	10.0	20	22.2
Total	270	100.0	90	100.0	90	100.0	90	100.0
Mean	1.5		1.32		1.43		1.67	
Membership of Cooperative society								
Member	213	78.9	76	84.4	52	57.8	85	94.4
Non-member	57	21.1	14	15.6	38	42.2	5	5.6
Farming experience								
1-5	60	22.2	21	23.3	23	25.6	16	17.8
6-10	88	32.6	32	35.6	31	34.4	25	27.8
11-15	51	18.9	18	20.0	13	14.4	20	22.2
16-20	55	20.4	19	21.1	23	25.6	13	14.4
21-25	10	3.7	0	0.0	0	0.0	10	11.1
26-30	6	2.2	0	0.0	0	0.0	6	6.7
Mean	12.11		11.07		10.72		13.78	
Educational level								
No formal education	26	9.6	10	11.1	14	15.6	2	2.2
Primary education	139	51.5	42	46.7	45	50.0	52	57.8
Secondary education	102	37.8	37	41.1	29	32.2	36	40.0
Tertiary education	3	1.1	1	1.1	2	2.2	0	0.0
Total	270	100.0	90	100.0	90	100.0	90	100.0

Source: Field survey data, 2022.

The distribution of respondents according to socioeconomic characteristics across the states and the pooled sample is shown in Table 1. The Table 1 revealed that the mean ages of respondents were 48 years (Anambra State), 46 years (Enugu State), 48 years (Imo State), and 46 years (Pooled sample). This implies that the majority of loan beneficiaries are young and in their productive age, suggesting that credit institutions might be willing to provide loan facilities to young and innovative borrowers who are more likely to adopt new agricultural innovations.

The result in Table 1 further shows that 67.8% of loan beneficiaries in Anambra State were males, while 60% and 68.9% of the loan beneficiaries in Enugu and Imo states were also males. The pooled result further shows that majority (65.6%) of the respondents were males. This implies that the male loan beneficiaries accessed more loan facilities than their female counterparts. This finding agrees with those of Mejeha, Bassey, and Obasi (2018); Kuye (2015) and Ugwumba, Omojola, and Azifuaku (2014), who reported that male farmers in Nigeria had greater access to BOA loans than their female counterparts.

The table also shows that Anambra State had a mean household size of five persons, while the mean household sizes for respondents in Enugu and Imo State were six (6) persons, respectively. The pooled result revealed that a high proportion (57.4%) of loan beneficiaries had a mean household size of six (6) persons, indicating large household sizes typical of a developing country like Nigeria.

Furthermore, 46.7% (Anambra), 53.3% (Enugu), 55.6% (Imo), and 51.9% (Pooled) States had farming as their major occupation. This implies that respondents combined their farming activities with other occupations to earn a living. This finding agrees with those of Agbo, Iroh, and Ihemezie (2015) and Akerele and Ayodele (2018), who noted that most rural farmers engaged mainly in farming as their primary occupation and need credit facilities to expand their operations, adopt new technologies, and improve productivity levels.

More so, Table 1 shows that in Anambra State, the proportion of respondents had a mean farm size of 1.32 hectares, while the majority of respondents (30.0%) and (27.8%) in Enugu and Imo states had mean farm sizes of 1.43 hectares and 1.67 hectares. The pooled result further revealed that 30.0% of respondents had a mean farm size of 1.5 hectares, indicating that farming is dominated by smallholder farmers engaged in small-scale farming. This suggests that the income generated from the farm will enable beneficiaries to support loan repayment with non-farm income, reducing the repayment burden.

Results show that in Anambra State, the majority of respondents (84.4%) were members of cooperative societies, while in Enugu and Imo states, the majorities (57.8%) and (94.4%) of respondents were also members. The pooled result revealed that (78.9%) of respondents belonged to cooperative societies, implying that membership helps ensure access to credit, information, and other productive inputs. This aligns with the findings of Oladeebo and Oladeebo (2008), indicating that cooperative societies possess social network elements essential for enhancing group dynamics and farm productivity.

The Table 1 further indicated that in Anambra State, 35.6% of respondents had a mean farming experience of 11.07 years. In Enugu and Imo states, 34.4% and 27.8% of respondents had mean farming experiences of 10 and 14 years, respectively. The pooled result showed that most respondents had a mean farming experience of 12 years, suggesting they gained practical experience. This experience likely aids them in effective farm resource allocation, farm management, and credit acquisition.

Finally, the table revealed that in Anambra State, 46.7% of respondents had attained at least primary education, while in Enugu and Imo states, the majority 50.0% and 57.8%, respectively had attained at least primary education. The pooled result further showed that 51.5% of respondents had attained at least primary education, indicating that educated farmers have the potential to enhance their farm productivity and economic status through adopting new technologies.

3.2. Factors Influencing Loan Repayment among the BOA Loan Beneficiaries

The result of the factors influencing loan repayment among the beneficiaries is presented in Table 2.

Table 2. Determinants of Loan Repayment among the BOA Loan Beneficiaries.

Variables	Anambra state (DL)	Enugu state (SL)	Imo state (DL)	Pooled (SL)
Constant	9.113 (4.714)***	415406.2 (7.225)***	14.683 (8.794)***	891245.4 (7.901)***
Age of respondents	−1.566 (−4.864)***	−23219.6 (−2.401)**	−0.037 (−0.769)	−43816.60 (−2.541)**
Educational level	1.544 (2.422)**	17373.45 (1.448)	0.994 (2.992)***	31184.64 (2.486)**
Household size	0.772 (0.745)	22047.77 (2.573)**	−0.718 (−1.584)	21284.30 (1.591)
Farm size	0.410 (1.599)	17704.87 (2.110)**	0.092 (1.633)	31899.75 (2.329)**
Farming experience	0.692 (2.701)***	21930.680 (1.878)*	0.301 (1.372)	41031.39 (2.238)**
Farm income	0.889 (1.039)	13031.610 (1.354)	1.708 (3.187)***	21801.72 (2.589)**
Distance to bank	−1.092 (−4.560)***	−25237.12 (−1.646)	−1.041 (−3.774)***	−48176.02 (−2.664)**
Membership of cooperative	0.657 (0.010)	22212.27 (0.730)	0.250 (1.384)	−11640.45 (−1.106)
Interest amount paid on loan	−0.676 (−2.254)**	−26081.41 (−2.252)**	0.946 (2.611)**	−50000.13 (−2.942)***
Value of collateral	0.665 (2.653)**	22408.22 (3.079)***	1.674 (3.509)***	42063.47 (2.499)**
Amount of loan obtained	1.849 (4.722)***	25175.144 (3.756)***	1.453 (3.478)***	32217.313 (3.267)***
R^2	0.865	0.832	0.793	0.885
Adjusted R^2	0.854	0.811	0.782	0.873
F- statistic	56.161***	52.481***	58.841***	73.803***

Note: ***, ** and * represents 1%, 5% and 10% levels of significance.
SL = Semi-log, DL = Double-log and these represents the lead models for the various equations by state. -
Source: Field Survey Data, 2022.

The findings on the determinant factors that influenced loan repayment by the loan beneficiaries in Anambra State showed that the coefficient of multiple determination (R^2) was 0.865. This result indicates that 86.5% of the variation in the amount of loan repaid by the loan beneficiaries was explained by the independent variables included in the model. The F ratio was significant at 1%, showing that the model produced a good fit. The regression variables for educational attainment, farming experience, value of collateral, and amount of loan obtained were the significant variables that influenced the amount of loan repaid by loan beneficiaries in the study area.

Similarly, the Table 2 revealed that in Enugu State, the coefficient of multiple determination (R^2) was 0.832, indicating that 83.2% of the variation in the amount of loan repaid by beneficiaries was explained by the independent variables included in the model. The variables for household size, farm size, farming experience, value of collateral, and amount of loan obtained were significant factors influencing the amount of loan repaid. Furthermore, the study showed that in Imo State, the R^2 was 0.793, meaning 79.3% of the variation in loan repayment was explained by the independent variables. The variables affecting repayment in Imo State included educational attainment, farm income, interest paid on the loan, value of collateral, and amount of loan obtained. These findings suggest that as the values of these variables increase, the amount of loan repaid also increases.

However, the pooled result of the multiple regression analysis on the factors that influenced the amount of loan repaid by the loan beneficiaries showed that the coefficient of multiple determinations (R^2) was 0.885. This result indicates that 88.50% of the variation in the amount of loan repaid by the loan beneficiaries was explained by the independent variables included in the model. The F-ratio was significant at the 1% level, showing that the model produced a good fit. The regression variables of age, educational attainment, farm size, farming experience, farm

income, distance to bank, interest amount paid on loan, value of collateral, and amount of loan obtained were the significant variables that influenced the amount of loan repaid by the loan beneficiaries in the study area.

The coefficient of age was significant and negatively related to the amount of loan repaid by the loan beneficiaries. The sign of the coefficient being negative suggests that the higher the age of loan beneficiaries, the lower the amount of loan that will be repaid by the loan beneficiaries. This implies that aged farmers have a high probability of loan default, as the reasons could be that aged farmers are risk-averse, experience a decline in manual strength, and are non-receptive to new innovations/technologies, consequently resulting in their tendency to default on loans. Ume et al. (2018) this finding is in agreement with Uneze (2013); Nwosu et al. (2014) and Eyo (2008) who reported that loan repayment among loan beneficiaries was more effective among younger people and that as an individual advance in age, their family responsibility also increases which could reduce their ability to repay borrowed funds as at when due.

The coefficient of educational attainment was significant and positively related to the amount of loan repaid by the loan beneficiaries. This suggests that, as the level of educational attainment increases, the amount of loan repaid by the beneficiaries also increases. This could be explained by the fact that education contributes to the efficient and profitable utilization of borrowed funds, as they understand the advantages of prompt loan repayment and do not regard such loans as an entitlement. As a result, the amount of loan repaid by beneficiaries increases as their educational attainment increases. This result agrees with those of Enimu, Emmanuel, and Uket (2017); Mbam, Nwibo, Nwofoke, Egwu, and Odoh (2021), and Akerele and Ayodele (2018), who reported that education enables beneficiaries of borrowed funds to invest prudently so as to enhance their repayment capacity.

The coefficient of farm size was significant and positively related to the amount of loan repaid by the loan beneficiaries. This suggests that, as the farm size increases, the amount of loan repaid also increases. This could suggest that, as the farm size increases, farm income also increases with the application of better farm management practices and the availability of more labor force for production purposes, thereby increasing the repayment ability of the borrower. This finding agrees with Mbam et al. (2021) who reported that farm size has a positive relationship with the amount of loan repaid by loan beneficiaries, but this finding contrasts with Mgbebu and Achike (2017) that farm size had no relationship with loan the amount of loan repaid.

The coefficient of farming experience was significant and positively related to the amount of loan repaid by the loan beneficiaries. This suggests that, as the years of farming experience increase, the amount of loan repaid by the beneficiaries also increases. This implies that, over time, the beneficiaries gained more expertise in managing production resources in farming and acquired practical knowledge on how best to use borrowed funds to diversify production enterprises, thereby resulting in the generation of remunerative revenue. This finding agrees with Mbam et al. (2021) and Mgbebu and Achike (2017), who reported that the higher the years of farming experience a farmer gains, the higher their ability to repay borrowed funds.

The coefficient of farm income was significant and positively related to the amount of loan repaid by loan beneficiaries. This suggests that the higher the farm income of the loan beneficiaries, the higher the amount of the loan that will be repaid. This could be explained by the fact that a higher farm income means more money will be available for the farmer to meet family needs and invest in his farming business which would provide higher returns and enhances their ability to meet loan obligations, this finding agrees with Afolabi (2010) and Mbam et al. (2021) who reported a significant positive relationship between farm income and amount of loan repaid.

The coefficient of the average distance to the bank was significant and negatively related to the amount of loan repaid by the loan beneficiaries. The sign of the coefficient being negative suggests that the average distance to the BOA outlet has an indirect relationship with the amount of loan repaid by the BOA loan beneficiaries, and that the farther the distance to the bank outlet, the lower the amount of loan that will be repaid by the BOA loan beneficiaries. This finding contrasts with that of Egwu and Nwibo (2014) and Ike and Umuedafe (2013).

The coefficient of interest amount paid on the loan was significant and negatively related to the amount of loan repaid by loan beneficiaries. This suggests that, as the interest amount paid on the loan obtained increases, the amount of loan repaid by the loan beneficiaries decreases. This could be explained by the fact that an increase in the interest rate raises production costs and hence reduces income and repayment ability. As a result, the higher the interest rate, the more difficult it is for loan beneficiaries to repay the borrowed loan. This finding agrees with Mejeha et al. (2018).

The coefficient of collateral value was significant and positively related to the amount of loan repaid by beneficiaries. This suggests that as the collateral value increases, the amount repaid also increases. This could be explained by the fact that increasing collateral value acts as a guarantee for the loan amount granted to beneficiaries, and the fear of lending agencies using the pledged collateral to offset loan default forces beneficiaries to strive to repay the loan according to the terms of the agreement. As a result, the higher the collateral pledged, the higher the likelihood of repaying the loan in the event of default. This aligns with Chandio, Jiang, Wei, Rehman, and Liu (2017), who noted that the value of collateral pledged has a positive effect on farmers' access to credit facilities and willingness to repay borrowed funds.

The coefficient of the amount of loan obtained was significantly positively related to the amount of loan repaid. The sign of the coefficient being positive suggests that, as the amount of loan obtained by the respondents increases, the amount of loan repaid also increases and vice versa. This could be explained by the fact that the more sufficient volume of loan is obtained by the respondent, the more likely that he will make an adequate amount available for the farm business enterprise, which could lead to higher income. This is to say that higher income could be possible with an adequate loan volume because of the advantages associated with economies of scale, which come about through expansion of purchases and production (Okorji & Mejeha, 1993). This finding agrees with those of Nwosu et al. (2014) and Ajah, Eyo, and Abang (2013), who established that the amount of loan obtained was a significant determinant of the amount of loan repaid by loan beneficiaries.

Table 3. Constraints to loan repayment by BOA loan beneficiaries.

Variables	Components							
	Factor 1 (Financial)				Factor 2 (Social)			
	PO	AN	EN	IM	PO	AN	EN	IM
High interest rate	0.770*	0.819*	0.764*	0.828*	-0.436	-0.598	-0.825	-0.668
Distance to BOA office	-0.610	-0.826	-0.588	-0.449	0.751*	0.807*	0.738*	0.780*
Delays in loan processing	0.842*	0.811*	0.581*	0.812*	-0.842	-0.878	-0.386	-0.680
High administrative cost	0.828*	0.706*	0.675*	0.660*	-0.373	-0.460	-0.604	-0.746
Limited amount of loan granted	0.852*	0.687*	0.304	0.869*	-0.516	-0.435	-0.687	-0.798
Inadequate number of branch outlets	-0.528	-0.719	-0.749	-0.609	0.771*	0.615*	0.619*	0.854*
Lack of sufficient returns	0.753*	0.823*	0.812*	0.782*	-0.463	-0.417	-0.423	-0.609
Heavy consumption expenditure	0.862*	0.758*	0.691*	0.743*	-0.485	-0.653	-0.710	-0.521

Note: * significant constraints.
Source: Field survey data, 2022.

Table 3 shows the varimax rotated principal component analysis of the factors that constrained loan beneficiaries from repaying borrowed funds. The table revealed that the financial and social components were the two major constraints faced by the respondents in repaying borrowed loans. Based on the varimax rotation factor loading and Kaiser's rule of thumb of 0.4 as a minimum point a variable loads before it can be accepted as having an effect, high interest rate, delays in loan processing, untimely loan disbursement, high administrative costs, limited amount of loan granted, lack of sufficient returns, and heavy consumption expenditures were extracted as the financially related constraints to loan repayment, while distance to BOA office and inadequate number of branch outlets were extracted as the socially related constraints to loan repayment by the respondents.

High interest rate was a significant constraint to loan repayment as preliminary studies revealed that high interest rate dissuades borrowing and affects the demand for and allocation of loanable funds in an economy. This

finding conforms with Ogonna, Azubugwu, and Nwankwo (2018); Kuye and Edem (2019), and Mbam et al. (2021), who posited that the major constraints to loan repayment were high interest rate and short repayment periods. Delays in loan processing were another financial constraint to loan repayment, as delays tend to discourage applicants and reduce repayment capacity, aligning with the findings of Mbam et al. (2021). Untimely loan disbursement was also a significant constraint, because when loans are not disbursed as scheduled, it can lead to loan diversion and poor repayment ability of borrowers. Additionally, collateral requirements were another major constraint, as they are needed by banks as guarantees for the loan amount. Higher collateral requirements generally discourage loan applicants, impacting repayment rates negatively. This finding agrees with Chandio et al. (2017) and Ukwuaba, Owutuamor, and Ogbu (2021), who reported that the availability of collateral requirement affects access to credit facilities from financial institutions. Limited amounts of loans granted were another financial constraint, as inadequate loan amounts would lead to underinvestment and loan diversion, which affect repayment capacity.

4. CONCLUSION AND RECOMMENDATIONS

Based on the findings, the study concluded that age, educational attainment, farm size, farming experience, farm income, distance to the bank, interest amount paid on the loan, value of collateral, and amount of loan obtained were determinants of loan repayment by beneficiaries in the study area. The study recommended that the Bank of Agriculture should design an effective loan disbursement plan to ensure timely disbursement of applied loans to applicants as due, to prevent loan diversion and improve repayment capacity. Additionally, the BOA should consider applicants' educational attainment level during loan processing, as this level had a significant relationship with the amount of loan repaid.

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