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Research

EFFECT OF MICROCREDIT DYNAMICS ON CATFISH ENTERPRISES IN IBADAN, NIGERIA

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Abstract: The broad purpose of this study was to assess the effects of Microcredit Dynamics on Catfish Enterprises in Ibadan, Oyo State, Nigeria, focusing specifically on microcredit accessibility, utilization, and repayment metrics. The population of catfish production firms in Oyo State comprises of several production systems. A multistage sampling technique was employed to select 150 catfish production firms operating under earthen, concrete, tarpaulin, and fiber/plastic systems. Primary data were collected using a structured questionnaire and analyzed using descriptive statistics and multiple regression analysis. Descriptive results showed a mean farmer age of 44.6 years and an average farming experience of 14.8 years. About 95.3% of respondents had access to credit, while 89.3% maintained business accounts. The mean intended loan amount was ₦311,149, whereas the mean loan accessed was ₦272,485.33. The microcredit accessibility index was 88%, indicating that farmers obtained 88% of the credit applied for. The utilization index was 95%, demonstrating efficient deployment of funds for production activities, while the repayment index stood at 87%, reflecting strong repayment performance. The result of the multiple regression analysis shows a significant relationship between catfish output (COUPUT) and independent variables microcredit accessibility, Utilization and repayment (MACCES, MUTIL & MREPAID) of the model. The study therefore recommends that Creditors should make sure that loan forms are processed swiftly and that successful applicants receive their loans on time so they can comply with their due date for catfish production.

Keywords: Catfish Enterprises, Microcredit Dynamics, Regression Analysis

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1.0 Introduction

A small amount of money given to an individual or group of individuals, frequently without collateral, is known as microcredit (United Nations, 2020). Low-income people are typically these borrowers, particularly those from less developed nations (LDCs). Other names for microcredit include "micro lending" and "micro loan."

However, the FAO (2019) classified microfinance into loans, insurance, savings, transfer services, and other financial products targeted at low-income people. A little loan from a bank or other organization is referred to as microcredit. These kinds of services are offered by a Microfinance Institution (MFI). Despite their wide differences, MFIs are all dedicated to providing financial services to customers who are less fortunate and more vulnerable than those of traditional banks.

According to the FAO (2019), aquaculture provided 43% of the world's fish supply in 2004. Around 142 million tons of fish were produced worldwide in 2005. From the village level to the national and international macroeconomic levels, fishing and the related processes of processing, packing, handling, transportation, and retailing are significant (Kura et al., 2004). To guarantee fish food security in Africa, higher fish output with characteristics of a faster growth rate is crucial (Micah et al., 2020).

The Oyo State Ministry of Agriculture's Fisheries Department (2018) states that the issues catfish producers face include high interest rates, bureaucratic bottlenecks, delayed loan approval, insufficient credit, negotiating produce prior to production sentiments, collateral requests from lenders, delayed loan repayment and ignorance of microcredit policies and availability. Despite the numerous initiatives (such as Bank of Agriculture (BOA), Bank of Industry (BOI), CBN Anchor Programs, and others) aimed at lessening small-scale loans difficulties, small-scale producers continue to encounter problems like the inability to obtain formal credit (Kuye & Edem, 2019).

One of the most restricting issues small-scale manufacturers faces is the inability to obtain official finance (Titus, 2020). Due to this, small-scale farmers have occasionally had to turn to friends, family, and moneylenders for finance, which is inefficient when it comes to meeting capital requirements, particularly for agricultural investments.

Similarly, private money lenders are more concerned with obtaining exorbitant interest rates or seizing the debtor's assets than they are with helping those in need. Thus, in terms of loan quantity and interest rate, microcredit organizations that provide official credit to the impoverished provide farmers hope (Falaye et al; 2020).

METHODOLOGY

2.1 The Study Area

The study was carried out in Oyo State, Nigeria's capital and most populated city, Ibadan. With a population of almost 6 million, it is the third most populous city in Nigeria, behind Lagos and Kano, and the biggest in terms of area. When Nigeria gained its independence in 1960, Ibadan was the largest and most populous city in Nigeria and the second most populated city in Africa, after Cairo. Ibadan was the biggest and most populous city in Nigeria and the second most populous city in Africa, after Cairo, at the time of Nigeria's independence in 1960. Along with several other communities from all around the country, the Yoruba people comprise the majority of the city's population.

By surface area, Ibadan was the biggest metropolis in Sub-Saharan Africa until 1970. The city's overall size was estimated to be 103.8 km2 in 1952. But just 36.2 km2 were constructed. This revealed that the remaining 67 km2 were used for non-urban purposes, including farmlands, forest reserves, river floodplains, and fishing grounds.

2.2 SAMPLE SIZE DETERMINATION

The study's respondents were chosen using a multistage sampling process. In the first stage, Ibadan was separated into three agricultural zones using the stratified sampling approach. In the second stage, three Local Government Areas that is, the L.G.As that produced the most catfish were chosen from each Zone using purposive sampling (Oyo State Ministry of Agriculture, 2018). From the three Zones, nine (9) L.G.As were selected. Zone A is represented by Ibadan North, Ibadan North-East, and Akinyele; Zone B is represented by Ibadan South-West, Oluyole, and Ido L.G.As. Finally, Zone C is represented by Lagelu, Ona-Ara, and Egbeda L.G.As.

From each of the nine L.G.As., three of the most prolific catfish-producing towns were chosen for stage three (3) using purposive sampling. Six catfish production businesses were chosen at random from each community in stage four. This suggests that each of the L.G. has eighteen catfish production businesses as they were selected. For this study, a total of 162 catfish production businesses were chosen. However, only 150 of the 162 questionnaires that were distributed were recovered, therefore the sample size is 150.

2.3 Method of Data Collection and Analysis

A questionnaire was employed to collect primary data in the study area. To accomplish the objectives, descriptive tools (percentage, frequencies, mode, means, tables,

and chats) and inferential statistics (ordinary least squares, or OLS model) were used to examine the obtained data.

2.4 Model Specification

2.4.1 Microcredit Accessibility Index

The Microcredit Accessibility Index was utilized to calculate the low and adequate benchmark. Access to microcredit (Bassey et al. 2019). The total value of microcredit obtained was divided by the total sum of microcredit that the catfish producing companies had requested, then multiplied by 100. Low microcredit accessibility is defined as a microcredit access index of less than 50%, whilst acceptable microcredit accessibility is defined as a microcredit access index of more than 50%.

$$\textbf{Index microcredit accessed} = \frac{\text{Microcredit accessed}}{\text{Microcredit Requested}} \times 100 \quad \text{(i)}$$

2.4.2 Microcredit Utilization and Repayment index

Microcredit Utilization Index: The utilization indices was calculated by dividing the entire amount of microcredit used by the catfish production firms by the total amount of microcredit accessed, then multiplying the result by 100 (Bassey & Nkanga, 2019).

$$\textbf{Index of microcredit utilized} = \frac{Microcredit\ Utilized}{Microcredit\ Accessed} \frac{microcredit\ accessed}{microcredit\ requested} \textbf{x 100} \quad \text{(ii)}$$

2.4.3 Microcredit Repayment Index: The utilization index previously described and the microcredit payback index are calculated using a similar format (Bassey Bassey & Nkanga, 2019). The total amount of repaid microcredit was divided by the total value of microcredit that the catfish production company had obtained, then multiplied by 100.

$$\textbf{Index of microcredit Repaid} = \frac{\text{Microcredit Repaid}}{\text{Microcredit accessed}} \times 100 \quad \text{(iii)}$$

2.4.4 Multiple Linear Regression

The impact of microcredit availability, utilization, and repayment on the output of catfish production businesses in Ibadan was examined using multiple linear regression.

The model's implicit form is displayed below:

$$Y = f(X_1 X_1, X_2 X_2, X_3 X_3, e) \quad \text{(v)}$$

Where,

Y= Catfish output (kg)

$X_1 X_1, X_2 X_2, X_3 X_3$ = determinants of microcredit accessed, utilization and repayment variables

e= error term

The following is the explicit form for this aspect:

Y = $b_0 b_0 + b_1 b_1$ MACES + $b_2 b_2$ UTILIZED + $b_3 b_3$ REPAY + e (vi)

Where,

Catfish output (kg) = CATOUTPUT

MACES stands for Microcredit Access (Naira).

UTILIZED = Use of microcredit (Naira)

REPAY stands for microcredit repayment in Naira.

e = error term

3.0 Results and Discussion

3.1 Summary of the Descriptive Statistics of the Respondents

The respondents' age distribution reveals that a greater proportion of them were between the ages of 36 and 45. This implies that the most catfish farmers were in their prime for productivity and economic activity. It also indicates that farmers who are intellectually and physically capable of overcoming obstacles started producing catfish.

The majority of those surveyed had farming experience between the ages of 14 and 18. This implies that most of the farmers were not brand-new to the sector. Years of experience are expected to boost productivity and increase knowledge of appropriate input combinations. Furthermore, only 4.7% of people in the research area lack access to any kind of microcredit. This shows that a significant proportion of the catfish farmers in the research area have access to various forms of financial facilities and also have company accounts.

Furthermore, the greater proportion of the respondents in the study area practiced the use of concrete pond system, this may be due to the convenience in stocking and harvesting associated with the concrete pond and the ease of management.

The larger percentage respondents' amount of microcredit intended to borrow between. 405,000-600,000 at 32.6%. The mean value of the amount intended to borrow by the respondents in the study area is ₦ 311,149. Also, the larger percentage of the respondents accessed a loan between ₦40, 000-135,000. This influences the capacity and level of expansion of the catfish business which translate to higher rate of return to scale.

Table 1: *The Descriptive Statistics of the Respondents in the Study Area.*

Variable	Frequencies	Percentage
Age (Years)		
25-34	34	22.8
36-45	50	33.4
46-55	38	25.4
56-65	21	14.1
>66	7	4.8
Farming Experience (Years)		
4-8	21	14.0
9-13	47	31.3
14-18	49	32.6
19-23	15	10.6
24-28	9	6.0
29-33	9	6.0
Access to credit		
Yes	143	95.3
No	7	4.7
Enterprise Account		
Yes	134	89.3
No	16	10.7
Pond system		
Concrete	76	50.7
Earthen	47	31.3
Plastic	21	14.0
Tarpaulin	5	3.7
Fibre	1	0.7
Amount of credit intended to borrow (₦) ('000)		
<200,000	21	14.0
205-400	47	31.3

405-600	49	32.6	
605-800	15	10.0	
>800	9	6.0	
Mean = 311490.0			
Amount Loan Accessed (₦)('000)			
<140	56	38.6	
140-285	35	23.7	
290-385	9	6.0	
390-485	19	12.7	
490-585	14	9.4	
590-685	5	3.2	
740-785	9	6.0	
>785	3	2.0	
Sources of Loan			
Bank of Agriculture	21	14.0	
Commercial banks	1	0.7	
Family/Friends	47	31.3	
Farmers Cooperative	76	50.7	
Private Lenders	5	3.7	
Total	**150**	**100.00**	

3.4 Microcredit Accessibility, Utilization and Repayment Index

3.4.1 Microcredit Accessibility Index

Microcredit accessibility index of the respondents is presented in table 2 below. The total amount of microcredit accessed in the study area is ₦40, 872,800 and the total amount requested or intended to borrow is ₦ 46,700,000 respectively.

Table 2: *Distribution of Respondents based on their Microcredit Access Index*

Microcredit Access Index	Amount (₦)
Amount of micro-credit intended to borrow	46,700,000
Amount of microcredit Accessed	40,872,800

Source: Computed from Field survey Data, 2020.

Index microcredit accessed = Microcredit accessed x100
Microcredit Requested

Index microcredit accessed = 40,872,800 x100
46,700,000 0.88 =88%

Catfish firms accessed 88% of the microcredit applications, according to the microcredit accessed index of 0.88. As a result, the microcredit accessibility index in the research area is sufficient.

3.4.2. Microcredit Utilization and Repayment Index

The microcredit utilization and repayment index of the catfish producers in the research area were displayed in Table 3. The results showed that the study area's microcredit utilization index was 95% and its repayment index was 87%. This means that 95% of the study area's microcredit was used, and 87% of it was repaid. The study area's microcredit utilization and repayment index is extremely high, which is encouraging to lenders.

However, this study's extremely high repayment index of 0.87 is higher than the repayment index (0.63) reported by Isibor & Nkamigbo (2019). This study contradicts Hassan & Yahya's (2020) assertion that small holder lending schemes in Nigeria have a high default rate. According to the average microcredit index values, 88%, 95%, and 87% of microcredit were accessed, used, and repaid, respectively.

Table 3: Distribution of Respondents based on their Microcredit Utilization and Repayment Index

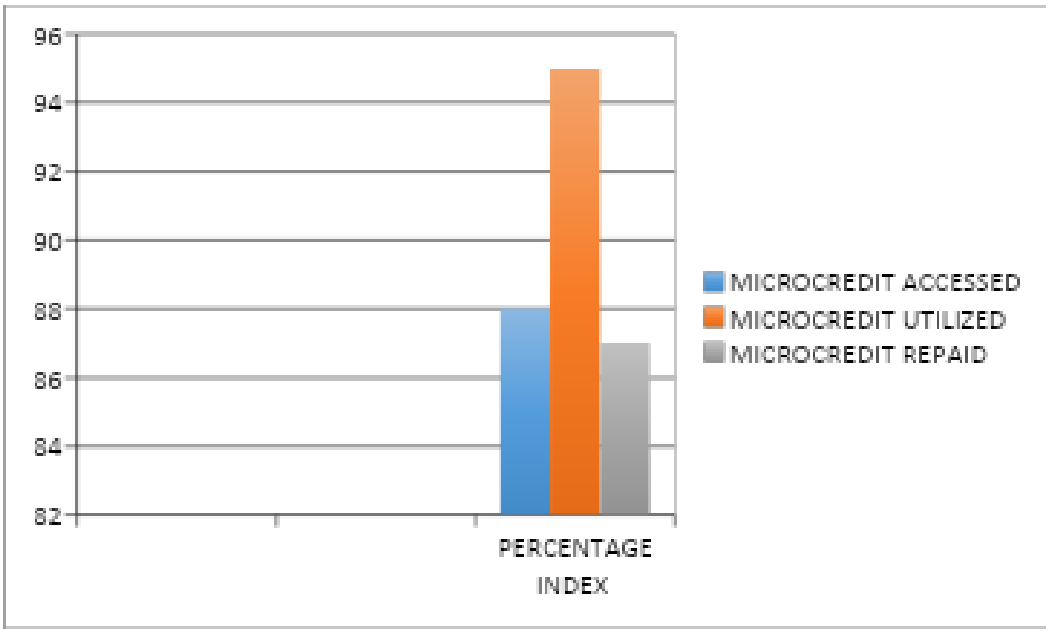
Microcredit Utilization Index	**Amount (₦)**
Amount of micro-credit utilized	39,013,000
Amount of microcredit Accessed	40,872,800
Amount of Microcredit Repaid	35,361,150

Source: Computed from Field survey Data, 2020.

Index microcredit utilized= $\frac{Microcredit\ Utilized}{Microcredit\ Accessed}\frac{microcredit\ accessed}{microcredit\ requested}$ **x 100**

Index microcredit utilized= $\frac{390,013,000}{40,872,800}$ x 100 =0.95 ~ 95%

$Index\ repayment\ = \frac{35,361,150}{40,872,800}$ x100 = 0.87 ~ 87%



Source*:* Field Survey (2020) Computation

Figure 1: *Average Microcredit Accessibility, Utilization and Repayment Index*

According to the mean value, each catfish producing company was able to obtain microcredit at an average rate of 88%. For every catfish producing business, the average

microcredit use rate was 95%. This shows that only 5% of the average amount of microcredit obtained was used for purposes other than catfish farming. Catfish producers are disciplined and do not violate the trust or contracts with lenders, as evidenced by the average microcredit payback index of 87% per catfish producing enterprise.

3.5 Determinants of Microcredit Accessibility, Utilization and Repayment Using Multiple Regression Analysis

Table 5 below displays the findings of the multiple regression analysis for the factors influencing microcredit availability, utilization, and repayment. The model's independent variables (**MACCES, MUTIL**, and **MREPAID**) and catfish output (**COUPUT**) have a significant relationship, as indicated by the F-statistics value of **140.133**, which is higher than the F-tabulated value. According to the modified R2 value of 0.74, the factors in the model account for 73% of the variation in the dependent variable. Thus, the null hypothesis was rejected while the alternative hypothesis, which states that "determinants of microcredit access have significant effect on catfish production enterprises in the study area," was accepted.

The constant was found to be significant and positively related to output. The microcredit utilized was found to be significant and positively related to catfish output in the study area at 1%, this implies that microcredit utilization has a positive relationship with catfish production output in the study area, that is, has microcredit utilization increases, the catfish output increases and vice-versa.

A unit increase in microcredit utilization will result to 0.019 increases in the catfish production output in the study area. This finding is in agreement with study of (Onyenekuru, 2020).

The microcredit accessed and microcredit repaid in the study area were found to be insignificant and negatively related to catfish output in the study area. Their result implies that, they had an inverse relationship with output, that is, has microcredit access and repayment increases, catfish production output decreases and vice versa. This may be due to the fact that high interest rate paid on loan accessed by the respondents has the ability to decrease output, because high interest rate siphon the reasonable part of the profit, which would have been used to produce more output. (Hassan et al; 2020) findings in their study corroborate the results of this study.

Table 4: *Effects of Microcredit Dynamics on Catfish Enterprises Using Multiple Regression Analysis*

VARIABLES	COEFICIENT	STANDARD ERROR	T-VALUE	SIGNIFICANCE
Constant	**1538.941**	**336.920**	**4.568**	**0.000*** **
Microcredit Accessed	**-0.002**	**0.005**	**-0.413**	**0.681**
Microcredit Utilized	**0.019**	**0.006**	**3.355**	**0.001*** **
Microcredit Repaid	**0.002**	**0.003**	**0.727**	**0.469**
R= 0.862				
R^2= 0.742				
Adjusted R^2=0.737				
F-stat=140.133				
F-stat, Sig= 0.000				

4.0 Conclusion and Recommendations

4.1. Conclusion

According to the study's findings, microcredit utilization **(MUTIL)**, with its estimated **0.019** beta coefficient, has a greater impact on catfish output in the study area. Microcredit payback **(MREPAID)**, which has a coefficient value of **0.002**, comes next, and microcredit access **(MACCES)**, which has an influence of **(-0.002)** on catfish output in the research region, comes last. The microcredit utilization and repayment variables had positive signs as expected, while the microcredit accessed were negatively signed. The a priori expectation, which stipulates that a unit increase in microcredit utilized and payback results in a proportional rise in catfish output in the study region, was supported by the remaining two REPAID and UTILIZED. The indicators have a very strong and significant association, as evidenced by the multiple co-efficient of determination (R2) value of **0.742**.

Additionally, the results suggest that the F-test calculated at the 5% level had a significant value of **140.133**.

4.2 RECOMMENDATIONS

The study's conclusions support the following recommendations.

i. Credit sources should make sure that loan applications are processed swiftly and that successful applicants receive their loans on time.

ii. To effectively use loans obtained for catfish production firms, managers of catfish production must have vocational training and financial education.

iii. In order for catfish production enterprises to have a bigger impact on fish output and the nation's economic growth, more financing should be made available to them by BOI, BOA, cooperatives, etc.

iv. Since high interest rates will deter potential catfish producers, private money lenders should lower the interest rates they impose on microcredit.

v. More microcredit institutions should be funded by the government in order to reduce interest rates and facilitate credit availability for businesses that produce catfish.

vi. In order to increase the profitability of catfish production in the study area, catfish producing firms should form and/or join associations or groups.

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