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Impact of Non-interest Financial Inclusion on Household Livelihood in the North-West Nigeria: A Preliminary Investigation

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***ABSTRACT*.** The first step for building self-sufficiency and sustainable livelihood is re-establishing the necessary assets for income generation. This study assesses the likelihood impact of non-interest financial inclusion across eighty (80) selected households in the Northwest region of Nigeria. Intuitively, the study considered three dimensions through which the impact could be felt; through change in households' income, consumption, and savings. Guided by evidence in the empirical literature, the paper employs logistic regression model in its analyses. Preliminarily, the Cronbach's alpha value of 0.62 suggests good acceptability and reliability of the research instruments. Empirical results show that the household's change in income model is significantly influenced by household's age, household size and cost of obtaining non-interest facility. The household's consumption model shows that household headed by a female, those households who use public means of transportation and those able to access a non-interest facility witnessed increase in their livelihood. In the household's savings model, the study found that years of business experience increases household's savings habit, thus improves livelihood. Consequently, the study posits that measures aimed at improving access to non-interest financial services, especially for women, is capable of enhancing livelihood in the study area.

KEYWORDS: non-interest, financial, inclusion, household, livelihood, logit

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1. Introduction

The overriding recognition of the complex make up of livelihood has resulted in many new modalities and more comprehensive programmes that address not only the replacement of physical assets, but the restoration of crucial social networks, provision of financial services, and development of markets (Kofarmata & Danlami, 2021). The first step for building self-sufficiency and a sustainable livelihood is re-establishing the necessary assets for income generation. Without an income, individuals and households are obliged to depend on family, friends and other available avenues of assistance to meet their most basic needs. Where help is limited, many are forced to resort to adverse coping mechanisms, such as cutting down on meals or selling off any remaining productive assets. Without assets, earning opportunities decrease and many are forced to migrate for menial work or take on overwhelming debt. To prevent this spiral cycle of vulnerability, it is imperative to act swiftly to protect the assets people have and replace or rebuild those that have been lost (United Nation Development Programme [UNDP], nd). Furthermore, it is generally agreed that assets ownership and household wealth accumulation significantly improve the livelihood and welfare of households. This implies that the higher the number of assets and the amount of wealth accumulation, the better the livelihood of the households. However, households in the Northwest region of Nigeria have minimal possession of assets for better livelihood. In fact, in most cases, the households in the region do not even possess the basic home assets for day-to-day livelihood based on the data provided by National Bureau of Statistics (NBS, 2020).

Programming and funding for livelihood support is channeled through multiple sectors, and livelihood practitioners struggle to develop effective coordination mechanisms and tools to assess needs, evaluate impacts, and prevent overlapping and conflicting interventions. However, many of these programmes have been mostly ad-hoc and poorly sustained (Bashir & Danlami, 2022). Moreover, poverty in the Northwest region of Nigeria is so pervasive to the extent that two states (Sokoto and Jigawa) in the Northwest region occupy the first and second positions of having the highest percentage of household living below the poverty line. In Sokoto State, 87.73% of households are poverty-stricken while that of Jigawa State is 87.02% (NBS, 2020). On a positive note, Kaduna State, in the region, recorded the least percentage of 43.5% of households living below the poverty line (NBS, 2020).

Therefore, the inability of households to attain livelihoods could lead to vulnerability, malnutrition, impoverishment, and often resulting in negative coping strategies for survival. For instance, evidence show that the average daily calorie intake per person in the region is about 1,300 calories which is much lower than the global daily average calorie intake of 2700 calories (Danlami et al., 2016; Kofarmata & Danlami, 2019). The situation is further aggravated by lack of ability to raise credit for investment in livelihood activities. This poverty trend indicates the need for higher financial inclusion of individuals in the Northwest zone to improve the livelihood of people in the area.

Against this background, this study is a preliminary investigation on the impact of non-interest transaction on the livelihoods of the clients in Northwest zone, Nigeria. The first section dwells on introduction. Section two reviews related literature while section three presents the empirical research methodology: sample description and data sources, model specification and specification of the empirical logit models. Sections four and five contain presentation of empirical findings and conclusion and recommendations, respectively.

2. Literature Review

The sustainable livelihood paradigm is framed on five independent and interrelated factors which consist of: physical, natural, social, human and financial (Department for International Development [DFID], 2001). Incidentally, these assets of livelihood coincide with the objectives of Islamic law known as *Maqasid-Sharīʿah* which Islamic jurists such as Imam Al-Ghazali, and also Dusuki and Abozaid (2007) whose arguments are in course to ensuring justice in the societal socio-economic living. Evidences indicated that Islamic financing and investment systems incentivize more ethical and economically required behaviours causing poverty alleviation by way of embracing non-interest

financial resources (Al-Harran, 1999; Dhumale & Sapcanin, 1998; Akhtar, 1998; Ahmed, 2001; El-Gamal, 2006 &Miazur, 2010) .Specifically, Bangladesh Institute of Development Studies (BIDS) (2001) conducted a study on microcredit, the study reported that there was a positive relationship between the microcredit and the income of the participants. In the same vein, Zaman (2001) assessed the impact of microcredit on poverty reduction and households' savings. The findings revealed that microcredit increases voluntary savings and reduces poverty among women and increases women's decision-making ability.

Additionally, Polyzos et al. (2023) conducted and empirical analysis of the impact of Islamic Banking on societal welfare using machine-learning tools. The study indicates that despite that, Islamic banking systems likely to lessen economic activity, it tends to improve societal welfare and financial stability. In another dimension, using a sample of 100 households, Hamida et al. (2023) to analyze the effect of Islamic financial inclusion on financial well-being. The results showed that access had a significant effect on financial satisfaction, financial safety and household financial worries. Moreover, Belouafi et al. (2015) concluded that there is a significant divergence between the theory and practice of Islamic Finance. Theoretical studies claim the 'superiority' of the IFS based primarily on equity and participatory modes of financing, while empirical studies are not yet conclusive.

Furthermore, a study by Amin et al. (2003) on the impact of three Islamic microfinance programmes on rural poverty eradication title: ASA Financial, Bangladesh Rehabilitation Assistance Committee (BRAC) and microcredit clients of Grameen Bank, the study concluded that the microcredit programmes were more successful in terms of reaching the poor. Moreover, Miazur (2010) concluded that productivity of crops and livestock, household income, as well as employment and expenditure of beneficiaries of Islamic microfinance facilities in Bangladesh, increased significantly as a result of the influence of changed behaviour and availability of the Islamic Micro finance. Additionally, Larry (2016) empirically established that; proper financing of non-interest transactions determines the trend of poverty reduction in Nigeria. In similar vein, Mahmood et al.(2017) conducted a study to determine the impact of Islamic microfinance on the household welfare of the target clients by observing its impact on health, education, income, expenditures and assets of the poor who took loan from Islamic Microfinance institutions (IMFIs). The study concluded that borrowing from Islamic Microfinance institutions has not only significantly raised monthly income; expenditures on food, education and health; and incremented households' assets but also surprisingly raised borrowed amount of loan which negatively affected income.

In addition, Bhuiyan et al. (2015) empirically found that credit access significantly improved sustainable livelihood of customers of the Islamic bank microfinance schemes in Bangladesh as well as reduced the poverty incidence of same. Furthermore, the level of beneficiary's education, household savings and total amount of loan received, were among the significant determinants of livelihood status of the borrowers. Similarly, Ahmed et al. (2015) opined that the Islamic financial sector has the potential to contribute to the achievement of the Sustainable Development Goals (SDG) as long as the principles of Islamic finance that support socially inclusive and development activities. This conforms to the study by Hoffmann et al. (2018) who assed impact of government-sponsored livelihoods projects among households and women in India. The results indicated that there isa significant positive impact on assets ownership among households.

Lastly, Jailos (2019) empirically examined the impact of financial inclusion on the livelihood of rural households in Tanzania. The results showed that, financial inclusion has a positive significant impact on rural livelihoods in Tanzania. Easy access to formal banking services leads to positive changes in the rural livelihood status of households. The study recommends aggressive strategies on financial inclusion to reduce poverty and financial access vulnerabilities. This is consistent with the findings of Bilal et al. (2020) who found a positive relationship between microfinance services and livelihood.

Based on the literature reviewed above, no study of similar kind conducted in Nigeria before. Therefore, the research fills a gap in the existing literature by examining the specific context of the

Northwest region and contributes to the understanding of the relationship between non-interest financial inclusion and livelihood improvement in terms of increase in income, savings and consumption of households.

3. Methodology

In view of the fact that the paper studies households at the micro level, this section contains the description of the methods used in data gathering as well as the model used by the study as the tool of data analysis.

3.1 Sampling and Data Source

The sampling technique used in this pilot study is the two-stage cluster sampling. In the first stage, the whole of the study area were divided into seven clusters on the basis of the States' boundaries of the Northwest region namely; Jigawa, Kaduna, Kano, Katsina, Kebbi, Sokoto and Zamfara states respectively. In the second stage, from each of the seven clusters (i.e., states) a total of 10 respondents were randomly selected from the clients of Jaiz Bank excluding Kano State, whereby by a total of 20 respondents were randomly selected, 10 respondents from the clients of Jaiz Bank and other 10 respondents from the clients of Lotus Capital. This gives the total of 80 respondents used as the samples for the pilot analysis. Table 1 gives the clear picture of the sampling apportionment as depicted below:

Table 1: Sampling Apportionment of the Pilot Study

States	Cluster One (Jaiz Bank Clients)	Cluster Two (Clients of lotus capital)	Total Pilot Samples
Jigawa	10	-	10
Kaduna	10	-	10
Kano	10	10	20
Katsina	10	-	10
Kebbi	10	-	10
Sokoto	10	-	10
Zamfara	10	-	10
Total	**70**	**10**	**80**

Source: Authors' Own

The pilot study was undertaken for the purpose of conducting a reliability test of instruments and also to examine the understanding of the respondents towards the designed questionnaire. The study used cluster sampling as used by some previous studies on household micro level analysis (Danlami, 2017; Tsauni & Danlami, 2016)

3.2 Model Specification

Literature is replete with the application of logit model when a researcher is confronted with discrete data. Since non-interest financial services have a binary tendency of either improving clients' welfare or not, accordingly, logit model was used to assess how provision of non-interest services by financial institutions improved the livelihood of the clients in terms of change in income, consumption and savings behaviors of the clients. Following Danlami et al. (2017) and Gujarati (2004), the theoretical logit model can be expressed as follows:

$$P = E\left(Y = \frac{1}{X_I}\right) = \frac{1}{1 + e^{-(\beta_1 + \beta_2 X_i)}} \quad (1)$$

For ease of expression if $z = \beta_1 + \beta_2 X_i$

$$P = \frac{1}{1 + e^{-z_i}} = \frac{e^z}{1 + e^z} \quad (2)$$

If P represents the probability of occurrence (say improvement in livelihood), the probability of not occurrence can be expressed as:

$$1 - P = \frac{1}{1 + e^{z_i}} \quad (3)$$

Hence the odds ratio between the probabilities of occurrence and non-occurrence can be expressed as:

$$\frac{P}{1 - P_I} = \frac{1 + e^{z_i}}{1 + e^{-z_i}} = e^{z_i} \quad (4)$$

Where: Pi/(1-Pi) represents the odds ratio of improvement in livelihood. That is the ratio of the probability that a household experiences improvement in livelihood to the probability of otherwise. Taking the natural log of equation (4) we obtained the following expression as:

$$L_i = \ln\left(\frac{P_i}{1 - P_i}\right) = Z = \beta_1 + \beta_2 X_i \quad (5)$$

Where:
L means the log of odds ratios, equation (5) represents what is known as the logit model which is used when the dependent variable takes a binary value; 0 or 1.

3.3 Specification of the Empirical Logit Models

Leveraging on the applications of logistic regression models by numerous researchers, this study draws from the models by Miazur (2010) Khan (2014) and Bhuiyan et al. (2015) and integrated a number of important variables to suit the purpose of this investigation. Here, the logistic regression model seeks to assess the impact of investment from non-interest facility and other determinants on household's income. The dependent variable is the change in the level of income witnessed by the beneficiaries of non-interest facility. The household change in income model is specified as:

$$Ln\left(\frac{P_i}{1-P_i}\right) = \beta_o + \beta_1 AGE_i + \beta_2 GND_i + \beta_3 INC_i + \beta_4 HHS_i + \beta_5 TRM_i + \beta_6 CFA_i + \beta_7 CNIF_i + \beta_8 NIFA_i + \beta_9 BEX_i + U_i \quad (6)$$

Where:

P_i = probability that the income of borrowers increases

$1 - P_i$ = probability of otherwise

AGE_i	=	**Age of the head of the borrower measured in terms of number of years**
GND_i	=	Gender of the head of the borrower coded as 1 for male, otherwise '0'
INC_i	=	Level of income average monthly, measured in Naira terms
HHS_i	=	Size of the household
TRM_i	=	Means of Transport
CFA_i	=	Current facility amount
$CNIF_i$	=	Cost of Non-interest facility
$NIFA_i$	=	Non-interest facility access
BEX_i	=	Years of business experience

β_1, β_2 … β_{13} are the coefficients of the regressor variables to be estimated. The constant term or intercept of the regression model is denoted by β_o while U_i symbolizes the error term.

3.4 Change in Consumption Model

The empirical model estimated for the change in the household consumption as a result of patronizing the non-interest facility is expressed as:

$$Ln\left(\frac{P_i}{1-P_i}\right) = \beta_o + \beta_1 AGE_i + \beta_2 GND_i + \beta_3 TRM_i + \beta_4 HHS_i + \beta_5 RFH_i + \beta_6 MIP_i + \beta_7 MCS_i + \beta_8 AMT_i + \beta_9 NIP_i + \beta_{10} COS_i + \beta_{11} BEX_i + \beta_{12} INC_i + U_i \quad (7)$$

Where:

P_i = probability that consumption of the borrowers improves

$1 - P_i$ = probability of otherwise

AGE_i	**=**	**Age of the head of the borrower**
GND_i	=	Gender of the head of the borrower
RHF_i	=	Request fully honoured
HHS_i	=	Size of the household
MIP_i	=	Mode of instalment payment (i.e. monthly, quarterly, etc.)
MCS_i	=	Membership of cooperative society
AMT_i	=	Amount of loan obtained
NIP_i	=	Number of instalment payment
COS_i	=	Cost of obtaining non-interest facility
BEX_i	=	Years of business experience
INC_i	=	Average monthly income
TRM_i	=	Means of Transport

$\beta_1, \beta_2 \ldots \beta_{15}$ are the coefficients of the regressor variables to be estimated. The constant term or intercept of the regression model is denoted by β_o while U_i symbolizes the error term.

3.5 Household Saving's Model

The empirical model to be estimated for the change in the household savings as a result of patronizing the non-interest facility is expressed as:

$$Ln\left(\frac{P_i}{1-P_i}\right) = \beta_o + \beta_1 GND_i + \beta_2 NIF_i + \beta_3 INC_i^2 + \beta_4 BEX_i + \beta_5 TRM + U_i \quad (8)$$

Where:

P_i = probability that savings of the borrowers increases

$1 - P_i$ = probability of otherwise

GND_i	**=**	**Gender of the head of the borrower**
NIF_i	=	Non-interest facility
BEX_i	=	Years of business experience
TRM_i	=	Means of transport
INC_i	=	Average monthly income

$\beta_1, \beta_2 \ldots \beta_{14}$ are the coefficients of the regressor variables to be estimated. The constant term or intercept of the regression model is denoted by β_o while U_i symbolizes the error term.

4. Results and Discussion

To evaluate the validity of the items that are perceived by this preliminary study to be related to the livelihood impact of households' financial inclusion in non-interest financial transactions in the Northwest region of Nigeria, the pilot analysis estimated the coefficients of Cronbach's alpha using STATA software. Cronbach's alpha shows the degree to which a phenomenon measures a concept. It is associated to the relationship of the items in the test (Danlami, 2017). Cronbach's alpha value ranges between 0 – 1, the further away the value from 0, the better the outcome(Danlami et al., 2017). Some scholars argued that a Cronbach's alpha below 0.5 is unacceptable (Gliem & Gliem, 2003). Table 2 exhibits the estimated value of the Cronbach's alpha for this pilot study.

Table 2: Estimated Cronbach's Alpha

Items	Observations	Alpha	Items	Observations	Alpha
GND	78	0.6226	RPP	53	0.6216
MST	79	0.6227	INCB4	66	0.5922
AGE	79	0.6227	INCAFTR	53	0.5776
EDU	79	0.6227	ITINC	65	0.6223
HHS	77	0.6226	CQE	71	0.6227
OCC	77	0.6225	CQTI	70	0.6226
INC	79	0.6187	MEB4	65	0.6147
NIF	64	0.6223	MEAFTR	61	0.6101
INIF	74	0.6220	ASTOWNB4	54	0.6219
FRH	58	0.6216	$ASTOWNB4^2$	54	0.6219
LOC	77	0.6225	MCS	53	0.6212
BEX	78	0.6227	MRSB4	51	0.6166
CRF	47	0.5565	MRSAFTR	51	0.6130
NIP	44	0.6209	MIRSB4	42	0.6103
MIP	54	0.6216	MIRSAFTR	41	0.6081
CNI	45	0.5019	MTSAFTR	51	0.6002
MTSB4	51	0.6060	**Test scale**		**0.6216**

Note: GND=gender, MST=marital status, AGE=age, EDU=level of education, HHS=household size, OCC=occupation, INC=income, NIF=non-interest facility, INIF=investment in non-interest facility, FRH=full request honored, LOC=household location, BEX=years of business experience, CRF=current facility, NIP=Number of repayment instalment, MIP=mode instalment payment, MTSB4=monthly total savings before, RPP=repayment plan, INCB4=total monthly income B4, INCAFTR=total income after, ITINC=increase in total income, CQE=consumption quality enhance, CQTI=consumption quantity increase, MEB4=monthly expenditure before, MEAFTR=monthly expenditure after,ASTOWNB4=assets own before, MCS=membership of cooperative society, MRSB4=monthly regular saving before, MRSAFTR=monthly regular saving after, MIRSB4=monthly irregular savings before, MIRSAFTR=monthly irregular savings after, MTSAFTR

Source: Authors' Own

Furthermore, this study uses different logit models to examine the result of the assessment of some factors influencing households' livelihood impact of financial inclusion in Northwest region of Nigeria, which may serve as an exploratory analysis for the main analysis. Table 3contains the results of the estimated model for household change in income which suggest improvement or otherwise in the livelihood of the households.

Table 3: Estimated logit model for household's change in income

VARIABLES	(1)	(1)	(2)	(2)	(3)	(3)
	COEF	ME	COEF	ME	COEF	OR
GND	0.937	0.103				
	(1.162)	(0.0983)				
AGE	0.0602*	0.00811*				
	(0.0354)	(0.00478)				
HHS	0.118*	0.0159*				
	(0.0695)	(0.00968)				
INC	-0.0476	-0.00641				
	(0.626)	(0.0842)				
BEX			0.0739	0.00759	-0.0164	0.984
			(0.140)	(0.0146)	(0.140)	(0.138)
TRM			-0.274	-0.0287		
			(0.937)	(0.0997)		
CFA			-8.94e-07**	-9.19e-08**	-4.95e-06***	0.999***
			(4.20e-07)	(3.60e-08)	(1.88e-06)	(1.88e-06)
CNIF					3.40e-06**	1.000**
					(1.48e-06)	(1.48e-06)
NIFA					0.211	1.234
					(0.749)	(0.924)
Constant	-5.083		-1.012		-1.272	0.280
	(7.038)		(1.030)		(3.248)	(0.910)
Observations	63	63	42	42	39	39

Note: Robust standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1

Source: Authors' Own

Table 3 above shows that household head age has a significant positive impact on the livelihood of the household at the 10% level of significance. The estimated value of coefficient of age indicates that the higher the age of the household head, the higher the log odd of increase in the household income. That is, a one-year increase in the age of the household head will lead to an increase in the log odd of increase in income by 0.06 units, all things being equal. This finding is in line with a priori expectation that as the age of household head increases, the household's income ten to increase. This is in line with the findings of Amendola et al. (2016). Moreover, the estimated marginal effect of this variable indicates a 1 percent increase in the age of the household head leads to about 0.8 percent change in the probability of the household income to increase.

Furthermore, the estimated coefficient of household size was found to be statistically significant at the 10% level. The coefficient of this variable was found to have a positive relationship with the odd of household change in income. The result indicates that increase in the number of household size by one unit increases the log odd of improvement in income by about 0.12 units all things being equal. This is in line with a priori expectation that when the size of the household increases, the income of the household will increase if the various household members would engage in an income generating activity. In additional, the estimated marginal effect of this variable was found to be statistically significant at the 10% level, the result indicates that increase in the household size by 1 percent leads to increase in the probability of increase in income by about1.59% all things being equal.

Additionally, the coefficient of the variable current non-interest facility was found to be statistically significant at the 1% percent level. The result indicates that there is a negative relationship between the amount of current non-interest facility obtain and the log odd of improvement in the household income. The higher the amount of the non-interest facility obtained, the lower the log odd of increase in the household income by an insignificant figure of about 0.00005 units. This is contrary to a priori expectation because, it was initially expected that the current non-interest facility obtained to increase the log odd of increase in income. This may be as a result of the fact that the economy in general is facing recession which affects the performance of various businesses in the country. In the same vein, the estimated odd ratio of this variable was found to be statistically significant at the 1% level. The estimated model indicates that a one Naira increase in the amount of current facility leads to a decrease in the odd of improvement in income by about 0.999 times lower, all things being equal. This finding also contradicts the finding of Miazur (2010).

Cost of non-interest facility, this variable represents the total cost of obtaining a particular non-interest facility, from the non-interest service provider measured in money terms (Naira value). The estimated logit model indicates that the coefficient of this variable was found to have significant impact of household livelihood at the 5% level. The result indicates that there is a positive relationship between the cost of obtaining a non-interest facility and the log odd of improvement in the income of the households, all things being equal. All things being equal, a one Naira increase in the cost of non-interest facility increases the log odd of improvement in the earning of the household by about 0.000034 units, all things being equal. This, however, does not conform to a priori expectation of the study, because the study expected that the higher the higher the cost of obtaining a facility, the lower the probability of the household livelihood improvement. This finding could be as a result of the fact that those facilities with higher cost have higher rate of return when utilized as investment. This finding contradicts that of Miazur (2010). Furthermore, Table 4 reports results of the estimated models for change in household's consumption.

Table 4: Estimated logit model for household's change in consumption

VARIABLES	(M1)	(M1)	(M2)	(M2)	(M3)	(M3)
	COEF	ME	COEF	OR	COEF	OR
GND	-1.625**	-0.255				
	(0.815)	(0.166)				
AGE	0.000989	0.000106				
	(0.0435)	(0.00464)				
HHS	0.182**	0.0195**				
	(0.0814)	(0.00866)				
INC	-7.61e-06	-8.12e-07				
	(9.76e-06)	(1.12e-06)				
BEX	0.142	0.0152				
	(0.138)	(0.0156)				
TRM	-2.403***	-0.329***				
	(0.852)	(0.125)				
NIP			-0.211***	0.810***		
			(0.0725)	(0.0587)		
RFH			-1.978*	0.138*		
			(1.102)	(0.153)		
AMT			-8.17e-07*	1.000*		
			(4.79e-07)	(4.79e-07)		
MIP_2					18.10***	7.234e+07***
					(1.340)	(9.694e+07)
MIP_5					17.67***	4.703e+07***
					(1.714)	(8.061e+07)
COS					-0.279	0.756
					(0.364)	(0.275)
MCS					-15.32***	2.23e-07***
					(0.926)	(2.07e-07)
Constant	-0.996		3.355**	28.65**	1.030	2.801
	(1.651)		(1.449)	(41.51)	(3.780)	(10.59)
Observations	69	69	39	39	31	31

Note: Robust standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1

Source: Authors' Own

Based on the result obtained from the estimated models, the coefficient of variable gender was found to be statistically significant at the 5% level of significance. The result indicates that when the household heads gender of the household is male, the log odd of change in the household consumption is higher by 1.625 unit compared to when the head is male. This is in line with a priori expectation that households that are headed by male have more tendency of livelihood improvement than otherwise. This finding conforms to the findings reported by Hoffmann et al. (2018).

In the same vein, the estimated coefficient of the variable household size was found to be statistically significant at the 5% level. The result indicates that there is a positive relationship between the size of the household and the log odd of change in household consumption. An increase in the size of household by one person increases the log odd of change in consumption by 0.182 units all things being equal.

Similarly, the estimated marginal effect of this variable was also found to be statistically significant at the 5% level. The result indicates that a 1 percent increase in the number of household members leads to an increase in the probability of change in the consumption of the household by about 1.95% percent all things being equal. This is inline with a priori expectation.

Furthermore, the estimated model indicates that the coefficient of the ownership of the main means of transportation was found to be statistically significant at the 1%level. The estimated coefficient of this variable was found to have a negative relationship with the odd of improvement in the household consumption. The estimated result indicates that households that have ownership of their major means of transport have lower log odd of change in consumption compared to otherwise by about 2.403 units all things being equal. Additionally, the estimated discrete effect of this variable was also found to have a negative statistical impact on the odd of change in the household consumption at 1%level of significance. The result shows that those households that own their main means of transport have about 33 percent lower probability of having change in consumption compared to otherwise.

Table 5exhibits the estimated coefficients and the marginal effects from the logit model for household livelihood's improvement from patronizing non-interest financial transactions measured by the households' change (improvement) in savings. The estimated results are shown in the Table 5:

Table 5: Estimated logit models for household's change in savings

VARIABLES	(1)	(2)
	COEF	ME
NIF	-0.0799	-0.0182
	(0.230)	(0.0517)
GND	-1.442*	-0.342*
	(0.866)	(0.197)
income2	-3.29e-11	-7.48e-12
	(5.75e-11)	(1.32e-11)
BEX	0.241**	0.0547**
	(0.106)	(0.0246)
TRM	-0.0802	-0.0182
	(0.665)	(0)
Constant	-0.820	
	(0.951)	
Observations	48	48

Note: Robust standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1
Source: Authors' Own

The estimated logit model in Table 5 indicates that the coefficient of variable gender was found to be statistically significant at the 10% level. The estimated coefficient of gender was found to have a negative relationship with the odd of change in household savings. The result shows that when the household head is a female, the household has lower log odd of experiencing increase in savings by about 1.44 units, all things being equal. This is in line with the a priori expectation that when a household is headed by a male in the study area, the tendency for the household savings to increase is high because the income earned by men usually is higher than that of women. This contradicts the findings of Mirach and Hailu (2014). Similarly, the estimated discrete effect of this variable was found to be statistically

significant also at the 10%level and has a negative relationship with the probability of change in the household savings. The estimated result indicates that the households that are headed by female has about 34%lower probability of experiencing improvement in their livelihood via change in the household's savings than those headed by male, all things being equal.

Furthermore, the estimated logit coefficient of the variable years of business experience was found to be statistically significant at the 5% level. The result indicates that this coefficient was found to have a positive relationship with the odd of household saving's improvement. The result indicates that an additional year of business experience leads to an increase in the log odd of household savings by about 0.241 units, all things being equal. This is in line with a priori expectation because the higher the years of business experience, the higher will be the income earned from the business leading to an increase in the rate of savings by the households all things being equal. Furthermore, the estimated marginal effect of this variable indicates that an additional year of business experience increases the probability of savings by about the 5%all things being equal.

5. Conclusion and Summary

This study is a preliminary investigation that seeks to assess the impact of non-interest financial services on household livelihood in the North-west Region, Nigeria. Therefore, it is a first step towards a broader study on financial inclusion and the livelihood impact of non-interest financial services in the Northwest zone in Nigeria. Based on the values of the estimated Cronbach's alpha coefficients, the result indicates that a full investigation on the impact of non-interest financial services on household livelihood using the selected predictor variables. Hence, an empirical investigation on the relationship between non-interest financial services and the household livelihood in north-west Nigeria is worth conducting, feasible and may likely reach a valid conclusion that can benefit the households that are clients, or the prospective clients of the services rendered by non-interest financial services providers in the study area.

Meanwhile, based on the pilot estimations, the logit model for household change in income indicates that age, household size and the cost of obtaining the non-interest facility exert positive and significant impacts on household's livelihood via household income enhancement. Additionally, household head being female, using of commercial means of transportation, improvement in the customers non-interest facility request and abstinence from cooperative societies induce improvement in household's livelihood in the study area. Equally, the estimated household savings model shows that an additional year of business experience is capable of improving household livelihood by enhancing the level of household savings.

Instructive from the findings is the fact that measures aimed at easing access and cost of non-interest financing, especially for large families, could induce positive impact on livelihood. Reducing gender imbalance in access to Islamic financial services is capable of improving household consumption cum livelihood. Therefore, a special package of Islamic mode of financing and financial inclusion for women entrepreneurs will create a better non-interest financial transaction that will have higher impact on household livelihood. Islamic banks should also give a special consideration to household enterprises with more years of business experience in their dealings. In addition, since increase in income was found to have significant impact in household welfare increase, policies and programmes aimed at raising income earnings of individuals should be embarked upon to improved household's livelihood. Income can be increased via employment generation, wealth creation, increase in government expenditure, empowering small and medium scale industries and skills development. Finally, as a limitation, this study is solely a pilot analysis based on a sample size of 80 non-interest financial services clients, a number which is inadequate to denote the true picture of households that are clients of non-interest financial services in the Northwest region of Nigeria. Consequently, there is an essential need for further study in the study area.

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تأثير الشمول المالي غير الربوي على معيشة العوائل في شمال غربي نيجيريا: تحقيق تمهيدي

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المستخلص. تتمثل الخطوة الأولى لبناء الاكتفاء الذاتي والمعيشة المستدامة إعادة تأسيس الأصول اللازمة لتوليد الدخل. تقوم الدراسة بتقييم تأثير الشمول المالي غير الربوي عبر ثمانين (٨٠) أسرة مختارة في المنطقة الشمالية- الغربية من نيجيريا. نظرت الدراسة في ثلاثة أبعاد يمكن من خلالها الشعور بالتأثير، من خلال التغيير في دخل الأسر، واستهلاكها وادخارها. تسترشد الورقة بأدلة في الأدبيات التجريبية، لذلك استخدمت الورقة نموذج الانحدار اللوجستي في تحليلات البيانات. تشير قيمة كرونباخ ألفا البالغة (٠,٦٢) إلى مقبوليّة وموثوقية جيدة لأدوات البحث. تظهر النتائج التجريبية أن تغيير نموذج الدخل يتأثر- بشكل كبير- بعمر الأسرة وحجمها، وتكلفة الحصول على تسهيلات غير ربوية. يوضح نموذج الاستهلاك بأن الأسرة التي تدير شؤونها أنثى، وكذلك الأسر التي تستخدم وسائل النقل العامة، والقادرين للوصول إلى تسهيلات غير ربوية شهدت تحسنًا في طرق عيشها. وفي نموذج الادخار الأسري، وجدت الدراسة أن سنوات الخبرة في العمل تزيد من عادة الأسر في الادخار، وبالتالي تحسن سبل عيشها. وبناءً على ذلك، تفترض الدراسة أن التدابير التي تهدف إلى تحسين الوصول إلى الخدمات المالية غير الربوية، خاصة للنساء، قادرة على تعزيز سبل العيش في منطقة الدراسة.

الكلمات المفتاحية: غير ربوي، المالية، الشمول، الأسرة، معيشة، لوجت
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