

IMPACT OF NON INTEREST FINANCIAL SERVICES ON HOUSEHOLDS' INCOME AND SAVINGS

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Abstract. This paper examines and assesses the impact of non-interest financial services on household livelihood as indicated by the improvement in the households' income and savings. A total of 750 client households were randomly selected from the seven states in the Northwest region of Nigeria. Intuitively, the study considered two dimensions through which the impact could be felt; namely; change in households' income and savings. The paper employs logistic regression model in its analyses. The result of the empirical estimations shows that the household's change in income model is significantly influenced by household's size, gender of the household head, current facility amount, number of repayment installments, the type of account maintain with the non interest financial service providers and membership in a cooperative society. In the household's savings model, the study found that religion, household size, income, operating a mudarabah savings account, type of the non interest facility enjoy and membership in a cooperative society increases household's savings habit, and therefore, improve livelihood. Lastly, 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-services, household, livelihood

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, inability of households to attain livelihoods could lead to vulnerability, malnutrition, impoverishment, and often resulting in negative coping strategies for survival. For instance, evidence shows 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 investigates the impact of non interest financial services on the livelihood of households in the Northwest Region of Nigeria. The remaining parts of the paper are explained as follows. Section two is the literature review, section three explained the methodology of the paper. Sections four and five contain presentation of empirical findings and conclusion and recommendations, respectively.

2 Literature Review

A 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-Shari'ah* 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.

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 Microfinance. Additionally, Larry (2016) empirically established that; proper financing of non-interest transactions determines the trend of poverty reduction in Nigeria. 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 assessed impact of government-sponsored livelihoods projects among households and women in India. The results indicated that there is significant positive impact on assets ownership among households.

Furthermore, Danlami et al. (2024) in their preliminary investigation on non interest financial services and household livelihood concluded that the factors that might have significant impact on the livelihood of the clients of non interest financial services include: household head gender, access to the non interest facility, age, household size cost of obtaining the non interest facility and the years of business experience. Being a preliminary study, the study recommended further in-depth empirical investigation on this concept.

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 strategy 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.

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 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 100 respondents were randomly selected from the clients of non interest financial services excluding Kano State, whereby by a total of 150 respondents were randomly selected. This gives the total of 750 respondents selected as the samples of the study

3.2 Model Specification

Literature is replete with application of logit model when a researcher is confronted with discrete data. 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: $P_i/(1-P_i)$ 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) Danlami et al. (2024) 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

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change in the level of income witnessed by the beneficiaries of non-interest facility. The household change in income model is specified as:

$$\ln\left(\frac{P_i}{1-P_i}\right) = \beta_0 + \beta_1 AGE_i + \beta_2 HHS_i + \beta_3 MSTATUS_i + \beta_4 GND_i + \beta_5 CFA_i + \beta_6 NRPI_i + \beta_7 LOC_i + \beta_8 BEX_i + \beta_9 TINCB_i + \beta_{10} TINCA_i + \beta_{11} INVNIF_i + \beta_{12} NTNIF_i + \beta_{13} ACT_i + \beta_{14} NAB_i + \beta_{15} NAA_i + \beta_{16} MCS_i + U_i \quad (6)$$

Where:

P_i = probability that the income of clients increases

$1 - P_i$ = probability of otherwise

AGE_i	=	Age of the head of the borrower
HHS_i	=	Size of the household
$MSTATUS_i$	=	Marital status of the household head
GND_i	=	Gender of the head of the borrower
CFA_i	=	Current facility amount
$NRPI_i$	=	Number of repayment instalments
LOC_i	=	Location
BEX_i	=	Years of business experience
$TINCB_i$	=	Total income before non interest facility
$TINCA_i$	=	Total income after receiving a non interest facility
$INVNIF_i$	=	Investment in non interest facility
$NTNIF_i$	=	Number of times non interest facility received
ACT_i	=	Account type
$NIFA_i$	=	Non-interest facility access
NAB_i	=	Number of assets owned before patronising non interest financial service
NAA_i	=	Number of assets owned after patronising non interest financial service
MCS_i	=	Membership of cooperative society

$\beta_1, \beta_2 \dots \beta_{16}$ are the coefficients of the regressor variables to be estimated. The constant term or intercept of the regression model is denoted by β_0 while U_i symbolizes the error term.

3.4 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:

$$\ln\left(\frac{P_i}{1-P_i}\right) = \beta_0 + \beta_1 GND_i + \beta_2 REL_i + \beta_3 AGE_i + \beta_4 MSTATUS_i + \beta_5 HHS_i + \beta_6 INC_i + \beta_7 LOC_i + \beta_8 BEX_i + \beta_9 ACT_i + \beta_{10} TNIF_i + \beta_{11} INVNIF_i + \beta_{12} MCS_i + U_i \quad (8)$$

Where:

P_i = probability that the savings of clients increases

$1 - P_i$ = probability of otherwise

GND_i	=	Gender of the head of the borrower
REL_i	=	Religion of the household head
AGE_i	=	Age of the head of the borrower
$MSTATUS_i$	=	Marital status of the household head
HHS_i	=	Size of the household
INC_i	=	Income of the household head
LOC_i	=	Location
BEX_i	=	Years of business experience
ACT_i	=	Account type
$TNIF_i$	=	Type of non interest facility
$INVNIF_i$	=	Investment in non interest facility

MCS_i = Membership of cooperative society

$\beta_1, \beta_2 \dots \beta_{12}$ are the coefficients of the regressor variables to be estimated. The constant term or intercept of the regression model is denoted by β_0 while U_i symbolizes the error term.

4. Results and Analysis

This section conducts analysis of the estimated results. The analyses conducted in different subsections are as follows:

4.1. Frequency distribution analysis

In this section, the socio-demographic characteristic of the respondents were analysed using a frequency distribution table. Also, the section analyses non interest financial services and inclusion as well as the household livelihood strategies using frequency distribution tables. Table 1 indicates the frequency distribution of the various respondents based on their socio-economic characteristics.

Table 1: Socio-Economic Characteristics of Respondents

Characteristics	Frequency	Percentage	Cumulative Percentage
Gender			
Male	575	79.64	79.64
Female	147	20.36	100
Age			
18 – 29	136	18.8	18.8
30 – 39	276	38.28	57.14
40 – 49	177	24.55	81.9
50 - 59	100	13.87	95.56
60 and above	32	4.44	100
Marital Status			
Single	157	21.75	21.75
Married	565	78.25	100
Religion			
Islam	684	94.87	94.87
Christianity	36	4.99	99.86
Others	1	0.14	100
Level of Education			
Non formal Education	107	14.84	14.84
Primary School	73	10.12	24.97
Secondary	171	23.72	48.68
Diploma/NCE	163	22.61	71.29
B.Sc./HND	157	21.78	93.07
Postgraduate	50	6.93	100
Occupation			
Civil servant	158	22.25	22.25
agriculture	201	28.31	50.56
knowledge-based	23	3.24	53.80
manufacturing	22	3.10	56.90
extractive	26	3.66	60.56
wholesale/retail	134	18.87	79.44
Professionals	46	6.48	85.92
services	26	3.66	89.58
Others	74	10.42	100
Monthly Income			
Less than ₦30000	142	19.75	19.75
₦30000 -₦60,000	173	24.06	43.81
₦61000 -₦90000	156	21.70	65.51
₦91000 - ₦120000	115	15.99	81.50

Above ₦120000	133	18.50	100
Household Size			
1 – 5	269	38.54	38.54
6 – 10	244	34.96	73.50
11 – 15	92	13.18	86.68
16 - 20	67	9.60	96.28
21 and above	26	3.72	100

Source: Authors (2024)

Table 1 indicates the socio-economic characteristics of the respondents. It is indicated that about 80 percent of the respondents are male. This is because most of the household heads are male based on cultural norms of the people in the region. Additionally this is indicating the gender gap in terms of financial inclusion in the region of the study as the samples of the study were randomly selected from the customers of the non interest financial service providers. Additionally, about 79 percent of the respondents are married, this is in line with the cultural practice of the region as the people of the region attach higher value to marriage. They perceived that marriage make the couple to be more responsible. Furthermore, about 95 percent of the respondents are Muslims. This is because Northwest region is the region of Nigeria that are dominated by Muslims. Also, since the respondents were selected from the clients of non interest financial service providers, definitely Muslims are the most patronisers of such services as interest transaction is vehemently condemn in Islam. Similarly, 82 percent of the respondents claimed to earned less N120,000 with some even earning less than N30,000. This is in line with expectation because most of the people in the region are living in extreme poverty. In fact based on the data from NBS (2023), the region constitutes the two States in the country with the highest rate of people leaving in extreme poverty.

Table 2: Non Interest Financial services and Inclusion

Characteristics	Frequency	Percentage	Cumulative Percentage
Having Investment in any NI-financial institution			
Yes	174	25.51	25.51
No	508	74.49	100
Accessibility to NI-Facility			
Highly accessible	10	1.69	1.69
Accessible	26	4.41	6.10
Neutral	65	11.02	17.12
Fairly accessible	221	37.46	54.58
Poorly accessible	268	45.42	100
Request for Financing from NI-Financial Institutions			
Yes	543	80.56	80.56
No	131	19.44	100
Type of Account have in NI- Financial Institutions			
Current Account	266	38.95	38.95
Savings Account	392	57.39	96.34
Mudarabah Investment Account	20	2.93	99.27
Wakalah Investment Account	5	0.73	100
Number of times NI loan/facility received			
Zero	2	0.39	0.39
One	326	63.18	63.57
Two	123	23.84	87.40
Three	54	10.47	97.87
Four	7	1.36	99.22
Five	3	0.58	99.81
Six	1	0.19	100
Non-Interest Facility			
Mudarabah Financing			22.48
Musharakah Financing	127	22.48	25.49
Murabaha Financing	17	3.01	92.39
Ijarah Financing	378	66.90	94.34
Al-Qqard Al-hasan	11	1.95	95.04

Salam Financing	4	0.71	99.12
Istisna'a Financing	23	4.07	99.82
Other services	4	0.71	100
	1	0.18	

Type of Non-Interest financial service provider

Full pledge Islamic bank	646	90.73	90.73
Conventional bank with non-interest bank window	16	2.25	92.98
	6	0.84	93.82
Islamic micro finance	0	0	0
Islamic fund managers	44	6.18	100
Takaaful			

Mode of Repayment Instalment

Monthly	337	64.19	64.19
Bimonthly	7	1.33	65.52
Quarterly	49	9.33	74.86
Semi-annually	14	2.67	77.52
Annually	32	6.10	83.62
Others	86	16.38	100

Source: Authors (2024)

Table 2 indicates the frequency distribution analysis of non interest financial services and inclusion in the study area. The Table indicates that the majority of the respondents (75 percent) claimed that they don't have any investment with any non interest financial institution. Hence they are totally clients of these institutions and this is in line with a priori expectation as most of the people in the region are poor, they fighting for daily survival and therefore cannot have extra resources for investment in the mentioned financial institutions. In the same vein about 83 percent of the respondents claimed that they have difficulty in accessing non interest financial service such as Mudarabah and the likes and therefore, they are mere account holders in these non interest financial institutions. This is expected as most of the people living in the region are extremely poor and therefore cannot scale through the risk assessment of these financial institutions so that they easily provide such non interest financial services to such people. However, of those that claimed to enjoy a non interest financing service, most of the claimed to received Murabah financing service based on cost plus mark up method in which they payback in a monthly instalments. Similarly, 96 percent of the respondents claimed that they have either savings or current account with such financial institutions. Only less than 4 percent claimed to have investment accounts in the form of either Mudarabah or Wakala Investment accounts.

Table 3: Livelihood strategies

Characteristics	Frequency	Percentage	Cumulative Percentage
Membership in cooperative society			
Yes	249	42.28	42.28
No	340	57.72	100
Increase in income due to NI-Facility			
Strongly Agree	14	2.24	2.24
Agree	62	9.90	12.14
Neutral	108	17.25	29.39
Disagree	199	31.79	61.18
Strongly Disagree	243	38.82	100
Consumption enhancement due to NI-Financial Institutions			
Strongly Agree	4	0.62	0.62
Agree	62	9.58	10.20
Neutral	141	21.79	31.99
Disagree	242	37.40	69.40
Strongly Disagree	198	30.60	100

Number of Assets owned before NI facility			
	305	66.74	66.74
25 and below	110	24.07	90.81
26 - 50	28	6.13	96.94
51 - 75	6	1.31	98.25
76 - 100	8	1.75	100
Above 100			
Number of Assets owned After patronising NI facility			
	273	60.53	60.53
25 and below	111	24.61	85.14
26 - 50	42	9.32	94.46
51 - 75	10	2.44	96.90
76 - 100	14	3.10	100
Above 100			
My savings increased as a result of Type of NI financial service provider			
	26	4.70	4.70
Strongly Agree	84	15.19	19.89
Agree	143	25.86	45.75
Neutral	161	29.11	74.86
Disagree	139	25.14	100
Strongly Disagree			
Wealth Increase from NI facility			
	16	2.66	2.66
Strongly Agree	71	11.81	14.48
Agree	93	15.47	29.95
Neutral	213	35.44	65.39
Disagree	208	34.61	100
Strongly Disagree			

Source: Authors (2024)

Table 3 indicates the distribution of livelihood strategies of the respondents. Most of the respondents argued that they don't participate in any cooperative society. This is not unusual in the study area as most people are not aware about the benefit of being in to a cooperative society. Additionally, the Table shows that the majority of the respondents (about 70%) disagree with the fact that their income increased due to being client of non-interest financial institutions. This is not surprising because most of these clients are mere account holders in such NI-Financial institutions. Most of them did not receive any form of NI-Facility such as Mudarabah etc. (apart from being an account holder) and therefore at the end of the day, being customers of such financial institutions could not change their income status. Nearly same response rates were found regarding the impact of the NI Financial institutions on other livelihood indicators such as: enhancement in consumption, increase in savings, change in the number of assets own and the total wealth increase. Most of the respondent did not report any significant changes of these livelihood indicators as a result of the activities of NI-Financial Institutions. This is as explained earlier due to the fact that most of the customers are mere account holder and owners with these NI-Financial Institutions and could not access the various actual NI-Interest facilities that may have a positive impact on their livelihood.

4.2 Inferential analysis of the relationship between non interest financial services and the household livelihood

Furthermore, Table 4 indicates the estimated logit model of the impact of non-interest financial service on the household livelihood indicated by the change in the household income. This is indicated below:

Table 4: Household change in income models

VARIABLES	(1) Coefficients Change in Income	(2) Odd Ratios Change in Income
Age	-0.0277 (0.0265)	0.973 (0.0258)
Hhs	0.109** (0.0437)	1.115** (0.0487)
Mstatus	-1.241** (0.549)	0.289** (0.159)
Gender	1.376*** (0.532)	3.960*** (2.105)
Current_facility _amount	3.24e-06*** (1.14e-06)	1.000*** (1.14e-06)
no_repay_instal ments	-0.161*** (0.0493)	0.851*** (0.0419)
Location	-0.166 (0.522)	0.847 (0.442)
Years of business experience	-0.0295 (0.0873)	0.971 (0.0848)
total_income_b 4_ni_fs	-6.20e-05*** (1.87e-05)	1.000*** (1.87e-05)
total_income_a fter_ni_fs	5.66e-05*** (1.85e-05)	1.000*** (1.85e-05)
investment_in_ ni_fi	-0.636 (0.556)	0.530 (0.294)
no_tmes_ni_fac ility_obtained	-0.614 (0.389)	0.541 (0.211)
1.acc_type	0.933* (0.546)	2.541* (1.387)
2.acc_type	-0.340 (1.176)	0.712 (0.837)
no_ast_own_be fore	0.0292** (0.0145)	1.030** (0.0149)
value_ast_own _before	-1.52e-08 (6.05e-08)	1.000 (6.05e-08)
Membership of coop society	1.243*** (0.460)	3.466*** (1.594)
Constant	0.297 (1.377)	1.346 (1.853)

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

Table 5 shows the estimated logit model for the relationship between non interest financial services and the household livelihood as measured by change in income. Based on the estimated result of the change in income model, the coefficient of household size was found to be statistically significant at 5% level. The result shows that this coefficient has a positive relationship with the improvement in household livelihood. A one unit increase in the family size will lead to increase in the log odd of household livelihood improvement by about 0.11 units, all things being equal. This is in line with a priori expectation because based on the culture of the people of the study area, larger family size tend to have higher income because most of the able family member tend to engage in one or more income generating activity which

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at the end of the day increases the overall family income. This is tally to the findings of Danlami et al. (2024). Additionally, the estimated result of household change in income model indicates that the coefficient of marital status was found to be statistically significant at 5% level. The estimated discrete effect of this variable was found to be negative which indicates that when the married client of non-interest financial institutions has lower log odd of improvement in his livelihood by about 1.24 units compared to the non married client. This is in line with a priori expectation because in some instant, married client divert part of the facilities received from those non interest financial institutions and used them to cater for family needs instead of re-investment which may affect their income flow unlike the non married clients whereby in most cases they do not have much family responsibilities and therefore channeled the facilities directly to where they were meant for.

Moreover, the discrete effect of the variable gender was found to be statistically significant at 1% level. This variable was found to be positive indicating that a male gender clients of the non-interest financial institutions tend to have higher log odd of improvement in livelihood by about 1.38 units compared to the their female counterparts. This is in line with a priori expectation because of the economic domination of male gender over the female gender in the study area which gives them more chance of investment opportunities. However, this contradicts the findings of Mirach and Hailu (2014). Furthermore, the coefficient of amount of current facility was found to be positive and statistically significant at 1%. Based on the estimated result, a ₦10,000 increase in the amount of current facility obtained from the non interest financial institutions will lead to increase in the log odd of household livelihood improvement by about 0.32 units all things being equal. This conforms to the a priori expectation because, the larger the facility obtained, the larger the investment/capital consequently the higher will be the change in income. This contradicts the findings of Danlami et al. (2024). Moreover, the estimated model indicates that the coefficient of variable number of repayment installment was statistically significant at 1% level. This coefficient was found to be negatively related with the log odd of improvement in income implying that the higher the number of repayment installment for a non-interest facility, the lower the log odd of household improvement in livelihood by about 0.161 units all things being equal. However, this finding does not conform to a priori expectation but supports the findings of Danlami et al. (2024)

Furthermore, the coefficient of variable income earned before enjoying any non-interest facility was found to be negative and statistically significant at 1% level. Based on the estimated result, a ₦10,000 increase in the amount of income before enjoying a non-interest facility is associated to a decrease in the log odd of household livelihood improvements by about 0.6 units all this being equal. This is contrary to a priori expectation. Contrarily, the estimated coefficient of variable number of assets before patronizing non interest financial services was found to be positive and statistically significant at 5% level. The estimated value of this coefficient indicates that a household that has larger number of assets by one unit tend to experience improvement in the log odd of their livelihood by about 0.03 units all things being equal. This is in line with a priori expectation because the non interest financial services tend to have more impact on households that already have some assets than poorer and impoverished households. On the same vein, the estimated odd ratio of this variable was found to be significant at 5% level. The value of the estimated odd ratio indicates that households that have higher number of assets prior to the non interest financial services have higher odd of improvement in livelihood via change income by about 1.03 times higher. This is in line with a priori expectation.

Similarly, the estimated coefficient of variable membership of cooperative society was found to be positive and statistically significant at 1% level. Based on the estimated value of this coefficient, a household that belongs to a particular cooperative society tend to have higher log odd of livelihood improvement from non interest financial services by about 1.243 units compared to those that do not belong to any cooperative society. This finding is in line with a priori expectation because the households that belong to a particular cooperative society tend to enjoy more non interest financial services and also can bargain for more benefits which may have more impacts on household livelihood. This finding conforms to the findings of ... Furthermore, the estimated odd ratio of this coefficient was found to be positive and statistically significant at 1% level. Based on the value of the estimated odd ratio, the odd of livelihood improvement from non interest financial services for households that are members of a cooperative society is about 3.47 times higher than those who do not belong to any cooperative society. This is in line with a priori expectations. Moreover, Table 5 indicates the estimated model for household livelihood improvement as measured by the household change in savings. The estimated coefficients and the odd ratios are shown in the following table:

Table 5: Household Change in Savings Model

VARIABLES	(1) Coefficients	(2) Odd Ratios
	Change in Savings	Change in Savings
gender	-0.223 (0.335)	0.800 (0.268)

religion	-1.762** (0.781)	0.172** (0.134)
age	-0.0128 (0.0150)	0.987 (0.0148)
Marital status	0.0645 (0.217)	1.067 (0.231)
Household size	0.0759** (0.0297)	1.079** (0.0320)
income	7.77e-06* (4.67e-06)	1.000* (4.67e-06)
location	0.262 (0.314)	1.299 (0.408)
Years of business experience	0.0454 (0.0468)	1.046 (0.0490)
1.acc_type	0.786*** (0.286)	2.195*** (0.627)
2.acc_type	1.803* (1.062)	6.067* (6.441)
3.acc_type	0.294 (2.301)	1.341 (3.086)
1.ni_facility	-1.743** (0.789)	0.175** (0.138)
2.ni_facility	0.488 (0.326)	1.630 (0.531)
3.ni_facility	1.064 (0.784)	2.899 (2.271)
5.ni_facility	0.274 (0.589)	1.315 (0.774)
6.ni_facility	1.907* (1.045)	6.730* (7.032)
inv_in_ni_fi	0.0122 (0.318)	1.012 (0.322)
Membership of coop society	1.557*** (0.263)	4.744*** (1.248)
Constant	-2.286*** (0.638)	0.102*** (0.0649)
Observations	429	429

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

Furthermore, Table 5 indicates the various coefficients and odd ratios of estimated logit model for the household livelihood improvement vis change in the household savings as a result of enjoying non interest financial services. The estimated logit model indicates that the coefficient of religion was found to be statistically significant at 5% level. The estimated value of this coefficient indicates that Muslim Clients have higher log odd livelihood improvement from the non interest financial services by about 1.76 units than otherwise. This is in line with a priori expectation because most of the clients of non interest financial services in the study area are Muslims and therefore the impact of these services will be much higher on Muslims than otherwise. Moreover, the estimated odd ratio of this variable was found to be significant at 5% level. The estimated value of the odd ratio indicates that the odd of household change in savings from non interest financial services for the clients that are non Muslims is 0.172 times lower than that of the clients that are Muslims.

Additional, the estimated result indicates that the coefficient of household size was positive and statistically significant at 5% level. The estimated value of the coefficient indicates that a one unit increase in the household size will lead to increase in the log odd of household livelihood improvement by about 0.076 units all things being equal. This is in line with a priori expectation because, after enjoying a non interest facilities, in most cases the clients use some of their family members as a source of free labour supply for their business, this save the labour cost, increases the earning and savings consequently leading to livelihood improvement. This also conforms to the findings of ,,, In the same vein, the estimated odd ratio of this coefficient was found to be statistically significant at 5%. Based on the estimated value of the odd ratio, a one unit increase in the size of the household leads to increase in the odd of household livelihood

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improvement by about 1.079 times higher, this is in line with the a priori expectation. Similarly, the estimated coefficient of income was found to be positive and statistically significant at 10% level. The result indicates that increase in income of the clients by ₦1000 leads to increase in the log odd of the household's livelihood improvement by about 0.008 units all things being equal. This is in line with a priori expectation because when income increases under normal circumstances part of it is usually goes to saving this is also in line with the theory of absolute income hypothesis.

Moreover, the coefficients of account type maintain by the clients of non interest financial services were found to be positive and have significant impact on the household livelihood. Based on the estimated result, the clients that operate savings account with the non interest financial service providers tend to have higher log odd of household livelihood improvement by about 0.786 units compared to those that operate current accounts. In the same vein, the odd ratio for household livelihood improvement for the clients that maintain savings account is 2.195 times higher than those operate current account with the non interest financial service providers. Both the odd ratio and the coefficient of this category were found to be statistically significant at 1% level. Also, the households that maintain Mudarabah Account with the non interest financial service providers have higher log odd of livelihood improvement by about 1.8 units compared to those who maintain current account all things being equal. So also, the estimated odd ratio of this coefficient was found to be statistically significant at 10% level. The estimated value of the odd ratio indicates that the clients of non interest financial services that maintain Mudarabah account experience increase in the odd ratio of household livelihood improvement by about 6.07 times higher compared to those that maintain current account.

Lastly, membership in one or more of the various cooperative societies was found to be positive and statistically significant at 1% level. The result indicates that the clients of non interest financial services that are members in a cooperative society have higher log odd of livelihood improvement through the change in savings by about 1.557 units than other wise. This is in line with the a priori expectation due to the fact that those clients that have membership in a cooperative society enjoy many privileges when dealing with the non interest financial service providers which have more impacts on their livelihood than those who do not have membership in any cooperative society. This is in line with a priori expectation and also conforms with the findings of ...Furthermore, the value of the estimated odd ratio of this coefficient was also found to be positive and statistically significant at 1% level. Based on the estimated result, the clients that have membership in a cooperative society enjoy more livelihood improvement through improve in savings with the odd ratio which has value of 4.74 times higher than those clients with no membership of any cooperative society.

5. Conclusion

This paper conducted an empirical analysis of the impact of non interest financial inclusion and services on the household livelihood in the Northwest Nigeria. The paper empirically analyses two dimensions that reflect improvement in the household livelihood namely; change in the household income and savings. The estimated model of household change in income indicates that the larger the size of the household the higher would be the impact of non interest financial inclusion and services on the livelihood of the client household. Also, households that are headed by male gender tend to experience more impact of such services on the livelihood than otherwise. In the same vein, it was found that current facility amount, number of assets owned before and having membership in at least one cooperative society. On the other hand, based on the estimated model for household change in savings, it was found that size of the household has a positive impact on the change in savings and that the higher the level of income, the more livelihood improvement due to change in savings. This is in line with the axiom of absolute income hypothesis. Also, it was empirically established that the clients that have at least one membership in a cooperative society tend to experience improvement in livelihood than otherwise.

6. Recommendations

Based on the findings of the study, the following practices were recommended:

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.

Islamic banks should also consider household enterprises with more years of business experience in their dealings.

Furthermore, there is a need to encourage the clients to subscribe or form some cooperative societies as this will make non interest financial services to have more impacts on the livelihood of the clients. Through cooperative societies, the clients are in a better position to bagain more and thereby getting more from the non interest financial services. Lastly, the client should stick more to savings and mudarabah accounts than current account as these accounts have more impact on the livelihood of the clients.

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