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An Impirical Analysis of the Contribution of Microfinance on Individual Households Consumption Expenditure

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Abstract: Expenditure is the total sum of money spend on consumption and other goods by and individual. Credit is the small amount of money given to the poor to start a small business or to expand an existing one. The main aim of this study is to ascertain the contributionof credit, savings and supervision on consumption expenditure of individual households of the beneficiaries in Northeast Nigeria. The study employed an intensive research design over an extensive period of time, a 24- weekly visit, for a period of 6 months, that 24 x 87 making a total of 2,088 observations. The population for this study consisted of a sample of 87 respondents, which involved 53 beneficiaries of the Development Exchange Centre micro-credit institution and 34 non-beneficiaries in Bauchi state, Northeast Nigeria. Stratified random sampling was employed in selecting the respondents for the study. Quantitative data were collected by the use of interview questionnaire. The data was processed using Stata. Ordinary Least Square was used to determine whether a group of variables together could predict a given dependent variable as method of data analysis. Mean difference between the beneficiaries and non-beneficiaries individual households expenditure was determined, to assessed the effect of credit, saving and supervision on expenditure. The three independent variables considered in this study were relevant and positively significant in explaining the contribution of credit, savings and supervision on expenditure. The study discovered that the mean analysis showed a highly significant difference in the mean value of the beneficiaries as compared to the non-beneficiaries on expenditure of the individual households. The study concluded that microfinance access to the individual households could increase expenditure and hence, reduce poverty among the poor.

Keywords: Beneficiary, ConsumptionExpenditure, Household, Microfinance, Non-beneficiary.

Introduction

Microfinance is the process of making or providing financial services to the poor without collateral. The main principle behind the operation of microfinance is to provide micro-loan to borrowers in group where members of a group monitor each to secure small loan instead of relying on physical collateral as it is in traditional financing in the banking industry (Nghiem *et al.*, 2012). (Bakhtiah and Touhidul (2016); Ghalib *et al.*, (2015), among many other studies, discovered significant positive impact of microfinance on household expenditure in in Nigeria and other part of the world. Microfinance was also found to be connected with the development of small businesses, which in turn, increased income and consumption per capital of the beneficiary (Murad& Idewela, 2017; Tafamil, 2019). Microfinance in Nigeria has captured the attention of policy makers, researchers and administrators throughout the world. Among the major microfinance institutions in Nigeria are: Development Exchange Centre (DEC), Microfinance Aso Loan and Savings etc. Although the microfinance movement has developed rapidly in Nigeria for some decade now, there has been very little research on the contribution of microfinance to the wellbeing of the beneficiaries in Nigeria. Moreover, there is no consensus in the microfinance literature

To the best of our knowledge, no previous studies in Northeast Nigeria have researched the contribution of microfinance on the beneficiaryand non-beneficiary households' consumption expenditure using a case study and intensive research design over an extensive period of time (up to six months in 24 weekly visits or observations). Therefore, to fill up this gap in the literature, this study assessed the contribution of microfinance on consumption expenditure of the household in Northeast Nigeria.

The major goal of this study is to investigate the contribution of microfinance on individual household consumption expenditure. The paper is made up of four section apart from section one. Section two discusses the conceptual framework and literature review. Section three explains the research methodology adopted in this study and four concentrated on data analysis and discussion of findings. Lastly section five deals with the conclusion and recommendations.

2. Literature Review and Conceptual Framework

2.1. Micro-credit Factors

Studies on microfinance factors are as follows:

2.1.1. Savings

Savings is another type of service or product of microfinance institutions which takes two forms; voluntary and mandatory savings. Voluntary savings is the amount of savings kept by microfinance institution's clients which is not meant to serve as a condition for the collection of an existing loan. Meanwhile, mandatory savings is the value of savings that the clients most deposit or keep in the microfinance institution as a condition for obtaining future loans (Al-Shami *et al.* 2014). Both voluntary and mandatory savings are important for improving the ability of the poor to cope with unforeseen shocks, decrease financial cost of borrowing and secure sustainable sources of funds (Ledgerwood, 1999; Robinson, 2001).Savings are required, just like credit is needed, by the women's businesses, and normally play an important role and serve as insurance for credit since business women lack the assets to present or show as collateral (Akanji, 2006).

2.1.2. Credit

Credit is the main product or service of microfinance institutions in the form small loans. This is provided to poor people at reasonable interest, for the purpose of income generating activities towards self-employment. The terms for providing the loan are important determinants of the clients' or beneficiaries business performance, welfare and improvement of the household (Al-Shami *et al.*, 2014). For example, increasing the size of the loan is essential for extending the market and the size of micro or small-businesses. The flexibility of loan disbursement which includes giving enough information about the terms and conditions of service and facilitating easy access and timely responsiveness are important determinants for improving the clients' well-being. Additionally, the flexibility of loan repayment policy which includes interest rate, repayment period and loan grace period are all critical factors for determining the impact of microfinance services on beneficiaries' well-being (Ledgerwood, 1999; Robinson, 2001).Credit is a part of the micro-credit factors which has to do with extension of small loans to those who are living in poverty and are not qualified for traditional bank loans (Shepard, 2015).

2.1.3. Supervision

Supervision comes from the word 'Super' meaning special, assisting people to improve their skills and understanding their career or profession. 'Vision' means perusal or seeing. Therefore, supervision means to be in charge and to oversee the work of others (London Deanery, 2012). Supervision is a process of looking after the operations and performance of an individual or set of individuals. It means overseeing the activities of another person.

A supervisor is the middle man between the top management and the employees or clients of an organization. The supervisor is a person that the employee or clients can approach at any time when they are in need of assistance and advice on some issues. The supervisor manages conflict when they occur (Kokemuller, 2007). Tnay *et al.* (2013) defined supervisory support as the physical and psychological encouragement by the supervisor or employer to the employees or clients who helps to promote their development. This could affect the employees' or clients' performance and effective development. Tan (2008) opined that the supervisors are mainly involved in performance evaluation and feedback, and the supervisor favorable and unfavorable treatment reflects on the organizational views and decisions on employees or clients.

Thus, in order to ensure that credit is being utilized for the purpose to which it is given, the micro-credit institution supervised the use of credit to ensure that credit is strictly used for income generating activities to boast the income of the family to enable the beneficiaries settle their loan, save and use the income to meet household expenditure and reduce poverty. Hence, help in achieving the micro-credit institution purpose.

2.2. Microfinance and Expenditure

Increase in expenditure is very vital for determining household poverty reduction. Studies have found that access to micro-credit increases expenditure of the household. For example, Bakhtiar and Touhidul (2016) explored the socioeconomic effects of micro-credit in Mymensingh district of Bangladesh, using a household survey. The study concludes that micro-credit increases income and expenditure on consumption, and hence, contributes to reduction of poverty in the study area. In addition, the borrower's expenditure on healthcare, educational and food intakes as well as housing condition has improved. Women can participate in decision-making and their authority in the household has increased. Moreover, the assets of the households have increased after participating in micro-credit.

Ghalib *et al.* (2015) used quasi-experimental research design and cross-sectional data collected from both the clients and the non-clients. Poverty reducing effects were observed on indicators of household business income, expenditure, water supply, health, clothing and quality of roofing and walls. The study reveals micro-credit to have positive effects on the household of the participants or borrowers. Similarly, Parajuji (2016) concludes that participation in micro-credit leads to increase in household expenditure based on income. Moreover, when income increase household expenditure also increases and hence, beneficiaries will increase ownership of houses and education. Giang *et al.* (2015) added that credit has a significant positive effect or influence on the mean expenditure of the poor households. The expenditure of the poor households who had credit increased more. In addition, Tafamel (2019) also discovered a positive and significant relationship between microfinance institutions and expenditure as well as poverty reduction.

Dupas and Robinson (2013) assessed the effect of limited admission to formal saving services on the growth of businesses in countries that are poor and concluded that despite huge fees for withdrawal, many women using the account were able to save and increase their productive investment and personal expenditure. Karlan *et al.* (2011) concluded that households that saved have a higher increased impact than the households that did not.

Thus, the following hypotheses are formulated:

H_1: Credit positively influences consumption expenditure of the beneficiaries and non-beneficiaries.

H_2: Savings positively influences consumption expenditure of the beneficiaries and non-beneficiaries.

H_3: Supervision positively influences consumption expenditure of the beneficiaries and non-beneficiaries.

2.3. Conceptual Framework

The research framework of this study is presented in a diagrammatic format as depicted in Figure 2.1.

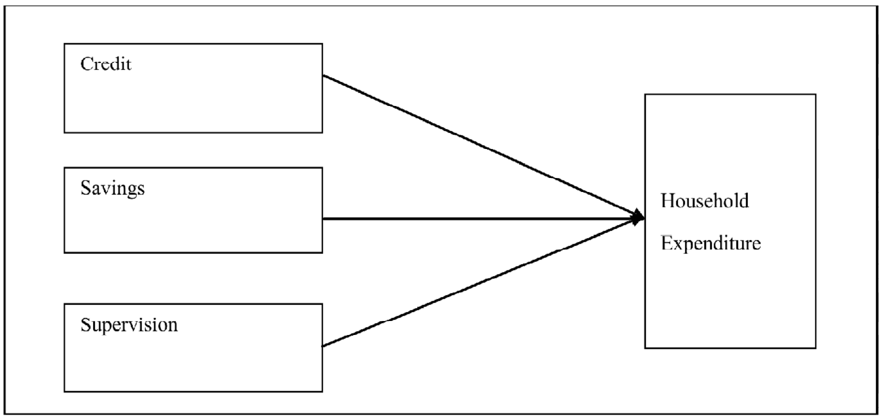

Figure 2.1: Conceptual framework

Normally, micro-credit institutions provide credit to borrowers (Banerjee *et al.*, 2014; Elahi & Rahman, 2006; Electrin *et al.*, 2013; Henry, 2015; Odetayo & Onaolapo, 2016). Nevertheless, there are micro-credit institutions which provide savings and supervision services to poor women. These women use the credit for establishing and managing their businesses to generate income or profit. The income realized is used to provide for or cater to the expenditure needs of the households (Banerjee *et al.*, 2014; Electrin *et al.*, 2013; Kumar *et al.* 2015; Sulemana & Dinye, 2016).

Studies that have utilized credit and savings as independent variables include: Girabe and Makwanje (2013); Odetayo and Onaolapo (2016) . This study also uses the two dimensions above with the inclusion of supervision. Studies that have used credit and savings as independent variables have disclosed positive and negative results in the relationship between micro-credit and poverty reduction.

This study includes supervision together with credit and savings as microfinance factors. This is because Imai *et al.* (2010) advised that micro-credit institutions should explore service delivery opportunities that give additional room to supervise the use of credit to improve outreach and the benefit to be derived by the beneficiaries. What makes credit and savings dimensions suitable in this study is based on how Al-Shami *et al.* (2014) and Mkpado and Arene (2007) defined or conceptualized them, i.e., savings is the money or funds kept with a micro-credit institution, especially by the poor people in order to be used as security for accessing loans, unexpected business deals and household expenditure. Credit is defined as the provision of small loans to poor women to start a new business or improve existing business in order to help them alleviate poverty.

However, looking at the way previous researchers have conceptualized credit and savings dimensions, this research finds it necessary to use them among the dimensions of micro-credit. This study also conceptualizes supervision as a process whereby the micro-credit supervisor goes to inspect and monitor the clients' businesses, collect loans and give advice on how to improve their business to generate income to improve expenditure in the household.

Poverty reduction is the dependent variable and it is measured in this study as, business income and expenditure. Duong and Thanh, (2015); Ghalib *et al.* (2015); and Onakoya and Onakoya (2013) defined poverty as inadequacy or total lack of income and freedom and deprivation of basic needs, like healthcare, clothing, food, education. Therefore, this study considers inclusion of the poverty reduction dimension in terms of business income and expenditure.

Thus, the effect chain of this study is represented as in Figure 2.2.

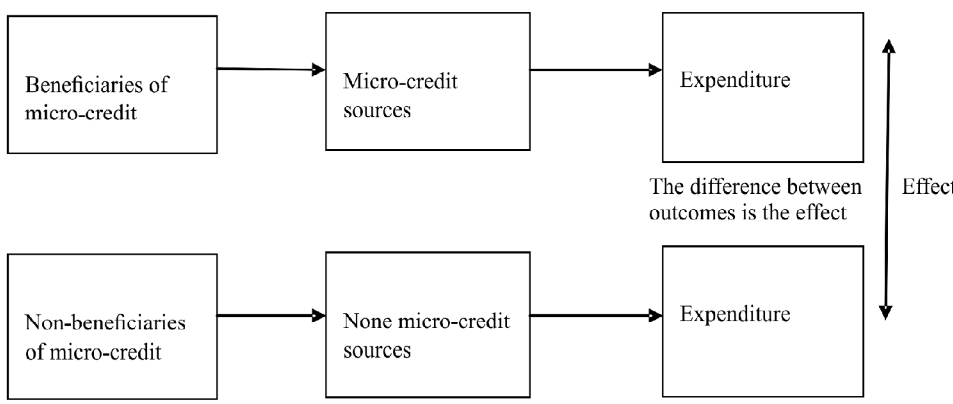

Figure 2.2: The effect chain

Micro-credit assumes that an intervention will change human behavior and practices in a manner that results in the attainment of expected goals and outcomes. To know and understand the effect of micro-credit on poverty reduction (expenditure) in this study, the difference in the values of key indicators or variables between the outcomes on beneficiaries' households from micro-credit is measured against the values of those variables on the non-beneficiaries.

To explain more on the impact chain model in predicting the effect of micro-credit intervention, the study follows the example of Ghalib (2009); and Ghalib *et al.* (2015) where their model used two groups living in the same area with identical social and economic features. The only distinguishing feature between the two groups was access to micro-credit intervention to the beneficiaries, while, the non-beneficiaries of the control group were not provided with micro-credit intervention.

The variable of interest in this research is expenditure. Thus, the beneficiaries are expected to exhibit enhanced behavioral signs in this variable of interest. Hulme (2000) argued that such changes in the behavior of the beneficiaries will result in higher economic security, which in turn, will lead to changes in despair or misery and mortality rates, skills and educational levels and future social and economic opportunities.

In addition, Hulme (2000) further pointed out two main approaches for the assessment of the effects for the purpose of micro-credit studies. These are the intermediary beneficiary and intended beneficiary approaches. The intermediary beneficiary approach is concerned with the beginning of the effect chain, more importantly, changes in the micro-credit institution and its operations, such as the sustainability of micro-credit institutions and outreach to the poor and vulnerable. The intended beneficiary approach of the impact assessment emphasizes on the end results of program or policy interventions on the beneficiary livelihoods or life. However, the study focuses on the intended beneficiary approach because of its suitability in differentiating between who benefits and how.

In addition, the unit of analysis is the household; this is because of it advantage over other units, like individual, community and enterprises. Hulme (2000) argued that the household is suitable and superior because it is easy to identify and note the appreciation of livelihood effects.

2.4. Underpinning Theory

The Classical Microfinance Theory of Change

The classical microfinance theory of change according to Dunford (2012) simply means a poor person goes to a microfinance provider and takes a loan (or saves the same amount) to start or expand a small business which yields enough net revenue to repay the loan with major interest and still have sufficient profit to increase personal or household income enough to raise the person's standard of living. Microfinance helps some clients to access credit to invest in small businesses and thereby have an opportunity to escape from poverty.

Microfinance is the supply of loans, savings and other financial services to the poor. The focus is often on micro-credit – providing small loans for poor people without collateral to start a small business (Asian Development Bank, 2013). Rudd (2011) also opined that microfinance is the channeling of small amounts of financial capital into poor markets to overcome the barriers of not being able to access credit in the traditional banks. Thus, resulting in welfare gains for both lenders and borrowers as the latent productive potential can be unlocked.

One cause-and-effect pathway within the classical microfinance theory of change, which poor households are assumed to take according to Dunford

(2012) involved three steps. **First**, they tap microfinance services (primarily as loans and/or savings and other services); secondly, they invest this money in small businesses; and **thirdly**, they manage these small businesses to yield enough return on their investments to increase their household income and consumption—leading to poverty reduction.

Conclusively, the micro-credit institution is considered as a channel through which the poverty level of the poor can be uplifted when they come into contact with micro-loans. The inability to have micro-loans by the poor may lead to the following consequences: lack of food security, health and nutrition and above all, the poverty situation of the household will deteriorate. Therefore, getting micro-credit helps in reducing the problem of access to capital by households that are poor, improves their strategy and ability to bear risks, assists in enhancing consumption and also uplifts the poor and the community from poverty (Shetty, 2005).

3. Research Methodology

The research design used or adopted for this study is a case study and intensive research design over an extensive period of time (up to six months in 24 weekly visits or observations). The study also uses cross-sectional data and quantitative data were collected using interviews from a structured interview questionnaire from2015/2016. In an attempts to measure the effect or describe the performance of DEC micro-credit beneficiaries and non-beneficiaries on household consumption expenditure in Northeast Nigeria, stratified random sampling technique was used. A sample of 54 DEC micro-credit beneficiaries and 37 non-beneficiaries household were selected for this study. Ordinary Least Squares Model and *t-test* for mean was used to analyze the data. Ordinary Least Squares was used to estimate the significant influence of credit, saving, supervision on household expenditure. The *t-test* for mean was used to assess the effect of micro-credit on household expenditure of the beneficiaries and the non-beneficiaries. The mean difference between the beneficiaries and the non-beneficiaries consumption expenditures signifies an effect on the consumption expenditure. Pallant (2011) observed that *t-test* is suitable for comparing the mean score on the variable with continuous data, for two different groups of respondents. Thus, the study used *t-test* in comparing the beneficiaries and non-beneficiaries households, in order to discover the real effect of micro-credit access. The consumption expenditure pattern was measured on food, assets, clothing, healthcare, education.

4. Data Analysis

4.1. Regression Analysis for Expenditure Model

The researcher conducted a multiple regression analysis to test the relationships among the explanatory variables (credit, savings and supervision) and predictor variable (expenditure). The researcher applied the Ordinary Least

Squares to aid in the computation of the measurements of the multiple regressions for the study.

For the expenditure model, the regression analysis is presented in Table 4.1:

Table 4.1: Model 2 summary

Model	*R–Square*	*Adjusted R–Square*	*F-Statistic*
2	0.54	0.53	0.01

Coefficient of determination explains the extent to which changes in the predictor variable can be explained by the changes in the explanatory variables, or the percentage of variation in the dependent variable (expenditure) that is explained by all the three independent variables (credit, savings and supervision).

The three independent variables that were studied, explain 54 percent of the effects of micro-credit on expenditure in Lere and Bombar districts as represented by the R-Square. The corresponding F-statistic is highly significant at one percent level of significance.

Ordinary Least Square estimates of micro-credit and expenditure are shown in Table 4.2.

Table 4.2: Ordinary least square estimates of micro-credit and expenditure

Expenditure	*Coefficient*	*Std. error*	*t-value*	*p-value*
Credit	0.16	0.02	8.65	0.01
Savings	0.05	0.03	1.76	0.10
Supervision	0.11	0.01	11.24	0.01
Constant	4.02	0.14	28.87	0.01

*Significant at 1%***Significant at 10%

In order to determine the relationship between dependent variable (expenditure) in Lere and Bombar districts and the three explanatory variables (credit, savings and supervision), the researcher carried out a multiple regression analysis.

As the regression analysis establishes, if all factors are taken into account (credit, savings and supervision) to be constant at zero, expenditure will increase in Lere and Bombar districts by 4.02 units. The data analysis also shows that if all other independent variables are taken at zero, a unit increase in credit facilities will lead to 0.16 units increase in expenditure in Lere and Bombar districts. Further, a unit increase in savings will lead to a 0.05 units increase in expenditure in Lere and Bombar districts, whereas a unit increase in supervision services will lead to 0.11 units increase in expenditure in Lere and Bombar districts. From the above analysis of the betas, it can be inferred that credit contributes a lot to the expenditure in Lere and Bombar districts, followed by supervision and savings.

At 10 percent level of significance, credit facilities have a 0.01 level of significance, savings, a 0.10 level of significance and supervision shows a 0.01 level of significance. Hence, the most significant factors are credit and supervision followed by savings. Thus, all the three variables are significant in explaining the expenditure of the beneficiaries and the non-beneficiaries in Lere and Bombar districts.

4.2. Discussion of Results for Expenditure

This section discusses the findings or outcomes of the study in connection to the direct relationships between the independent and dependent variables. Three hypotheses were formulated in this model to test the direct associations. These hypotheses and summary of the results are presented in Table 4.3.

Table 4.3: Hypotheses and summary of results for the relationships

Hypotheses	*Relation*	*β*	*t-value*	*p-value*	*Decision*
H_1	Credit positively influences expenditure of beneficiaries and non-beneficiaries	0.16	8.65	0.01	Yes
H_2	Savings positively influences expenditure of beneficiaries and non-beneficiaries	0.05	1.76	0.10	Yes
H_3	Supervision positively influences expenditure of beneficiaries and non-beneficiaries	0.11	11.24	0.01	Yes

The following discussions are captured based on the research questions. The second research question is to know the level of effectiveness of credit, savings and supervision on expenditure of the beneficiaries and non-beneficiaries in the Northeast Nigeria? In line with this question, the second objective of this study is to examine the effectiveness of credit, savings and supervision on expenditure of the beneficiaries and non-beneficiaries in the Northeast Nigeria. To respond to the second research question, three research hypotheses (i.e., H_1, H_2, H_3) were formulated and tested using Ordinary Least Squares regression model. In relation to the direct impacts of this construct, this study finds that credit, savings and supervision have significantly positive relationships with expenditure.

Specifically, credit is defined as a component or unit of micro-credit factors that deals with extension of small loans to those who are living in poverty and not qualified for traditional loans (Shepard, 2015). Thus, an individual who collects loans and manages it properly or uses it for the purpose for which it is given, has less pressure. This is because the benefit derived is used as income in the household to meet daily expenditure and hence, helping to reduce poverty. In this study, the fourth hypothesis (H_4) states that credit positively influences expenditure. As expected, the findings provide support for the hypothesis. The possible explanation of the direct effect could be viewed from theoretical perspective as well rather than just relying on empirical studies. Hence, the classical microfinance theory of change (Dunford, 2012), serves as a basis for the possible justifications of the new findings.

However, only small loans are provided to the poor women and used for income generating activities. The incomes help in meeting their daily expenditures and consequently reduces poverty. Therefore, the issue of using credit to generate income to improve expenditure and alleviate poverty is consistent with the classical microfinance theory of change (Dunford, 2012). The theory emphasizes on the use of credit for income generating activities or to have gainful employment to help the poor have access to basic expenditure needs (Dunfotd, 2012).

In a similar vein, the impact of micro-credit is expected to be shown in the changes occurring in the standard of living of the beneficiaries. The items used to measure changes in standard of living are many: income, expenditure on food, clothing, shelter health, education and social involvement (Murad & Adewale, 2017; Nghiem, Coelli & Rao, 2007; Onakoya & Onakoya, 2013). Thus, Rudd (2011) also opined that microfinance is the channeling of small amounts of financial capital into poor markets to overcome the barriers of not being able to access credit in the traditional banks, thus resulting in welfare gains for both lenders and borrowers as latent productive potential can be unlocked. Hence, the performance of micro-credit is assessed using individual household studies on whether there is an increase in income and consequently, improvement in expenditure on food, clothing, healthcare, education and shelter (Congo, 2002).

In addition, this finding is similar to previous studies on the direction of the relationship, that there is significant positive relationship between credit and expenditure (Bakhtiar & Touhidul, 2016; Ghalib *et al.*, 2015; Giang *et al.*, 2015; Parajuji, 2016; Tafamil, 2019), that income increases after collecting loans and consumption expenditure becomes possible for beneficiaries to buy food and other goods. Credits often have spillover effects on the areas of poverty reduction, including education and health (Ghalib *et al.*, 2015).

However, in Nigeria, especially the Northeast region of the country, where there is high level of poverty compared to other regions many people are willing to get out of poverty. The quest to get out of poverty makes it possible for the poor to look for means to generate income to help improve expenditure. The positive direction of this study is in line with what is happening in the environment, since context also plays a great role in determining the outcome of a study. The people in the area are industrious and want to generate income and get out of poverty and hence, they use the loan in productive activities, which generate income to meet their expenditure. In addition, women in the area of the study are mostly allowed to provide for themselves and their children or family members. For the women to meet the household expenditure, they have to be committed to their business to raise money.

Savings according to Keynes (1936), is the surplus or residue of income over consumption expenditure. Similarly, Uremadu, (2006) observed that saving is that aspect of income of the period that is not consumed. Thus, savings can be said to be equal to surplus of income over consumption.

In the same vein, the present study predicts that savings positively influences expenditure (Hypothesis 5). The result provides empirical support for this hypothesis. The possible explanation of the direct effect could be viewed from the theoretical perspective as well rather than just relying on empirical studies. Thus, this finding concurs with the classical microfinance theory of change on savings. Dunford (2012) reported that savings can be invested in small business to generate income for the household to meet its expenditure needs. Thus, savings can be said to be part of the micro-credit factors to be used in meeting the expenditure needs of the household. Hence, the study shows great support for savings as a means for expenditure and poverty reduction.

Similarly, and most importantly, in the context of this study, the current findings provide empirical support for this hypothesis, and significantly agree with results of previous studies (Bakhtiar & Touhidul, 2016; Dupas & Robinson, 2013; Kwai & Urassa, 2015) that have found savings to have a positive impact on the household expenditure and in reduction of poverty. This implies that as savings of the household increases, poverty reduction may also be high because savings might be deployed for to meet unexpected expenditure in the household.

However, the findings could be positive because the beneficiaries who participated in the survey were aware of the importance of savings, especially when they want to invest in business, purchase an asset, clothes for the family during festivities, and pay school fees for the children and health services. Moreover, when a family is expecting ceremonies (wedding and naming) within the year, they have to save in order to meet such expenditure. Therefore, the positive effect between savings and expenditure in the study area is surprising. Similarly, it could be as a result of their willingness to save for future investment expenditure. Thus, savings increases their ability to withstand unforeseen shocks and other planned expenditures as well as poverty reduction.

Supervision according to Tnay *et al.* (2013) is the physical and psychological encouragement by the supervisor or employer to the employees or clients who helps to promote their development. This could affect the employees' or clients' performance and effective development. Consistent with hypothesis 6, a highly significant and positive relationship between supervision and expenditure is found. Since the finding regarding this construct is a main contribution of this study, possible explanation of the direct effect could be viewed theoretically and empirically. Thus, this finding concurs with the classical microfinance theory of change. Since, the classical microfinance theory of change has to do with providing credit and other services to the poor people in order to engage in productive activity to generate income to improve expenditure of the household and lift them out of poverty (Dunford, 2012). Thus, apart from credit and savings, supervision is among the other services to be used to improve expenditure to achieve the aim of poverty reduction. Hence, the providers of the funds need to supervise the usage to ensure that the beneficiaries derive maximum benefits.

Surprisingly, supervision shows great support for the improvement of expenditure as a poverty reduction mechanism. The result shows supervision to be significant and having positive influence on increasing expenditure. This suggests that supervision of women encourages hard work in their business to gain income to meet their daily household expenditure and consequently, poverty reduction.

In the same vein, empirically, the positive influence between supervision on expenditures is also in accordance with the study of Rehman *et al.* (2011) in human resource management, which stated that supervisory support plays a critical role on organizational commitment, as the results shows supervision to increase commitment in pharmaceutical industry. However, this result is contrary to the study of Latif and Sher (2009) which disclosed no support for supervision. The study finding is important because the provision of adequate supervision to the beneficiaries will help boost their economic activities and entrepreneurial ability. This will, in turn, lead to income generation and improvement in household expenditure and hence poverty reduction.

4.3. Diagnostic Tests

To ensure the robustness of the estimation technique, the Breusch-Pagan test for heteroskedasticity, the Ramsey test for functional misspecification, Information Matrix test, Mardia's test for multivariate normality and Link test for model specification were conducted for the two models. Table 4.4 shows the various diagnostic tests conducted.

Table 4.4: Diagnostic test

	Expenditure
Tests conducted	Model 2 p-value
Breusch-Pagan test for heteroskedasticity	0.38
Ramsay reset test for functional misrepresentation	0.13
Information matrix test	0.64
Mardia's multivariate normality test	0.91
Link test for model specification	0.55

From the Breusch-Pagan test for heteroskedasticity which uses the chi-square statistics, the result shows that there is no evidence of heteroskedasticity in the model with expenditure as dependentvariables. Table 4.4 shows the estimated chi-square probabilities of 0.38 for expenditure model, are insignificant.

To test for specification errors, Ramsey (1969), in his study, considered the test for specification errors in order to determine whether there are omitted variables in a model using reset test for functional misspecification. Thus, in line with this idea, the study also used the Ramsey reset test for functional misspecification. The test, as shown in Table 4.4, reveals that the models is free of specification errors. This test used the F-statistic to test for omitted variables in the specified model. The reported F-statistic of 0.13 for expenditure model, are insignificant. These result show that there are no omitted variables in the models.

For information matrix test, Cameron and Trivedi (1990) stated that information matrix test is a test conducted to determine the error terms of the models as to whether they are homokedastic and normally distributed. The information matrix test was conducted in this study to determine the error terms. Table 4.4 shows the overall p-values of the information matrix test to be 0.64 for expenditure model, to be insignificant. These suggest that the error terms of the two models are homokedastic and normally distributed.

In order to check for multivariate normality, Korkmaz, Goksuluk and Zararsiz (2015) observed that it is important to assess multivariate normality in order to continue with statistical analysis. Pallant (2011) opined that Multi Linear Regression Model needs to be normally distributed. Hence, a check for normality in the distribution of variables was conducted. Following the normality check using Mardia's (1970) multivariate normality test for multivariate normal distribution, it is observed that the data set follows a multivariate normal distribution. The estimated chi-square of 0.91 for expenditure model, is insignificant as shown in Table 4.4. Therefore, the study does not have any reason to reject the null hypothesis.

Link test is a byproduct of a diagnostic test (Pregibon, 1979). In order to determine the correct link function of the model's adequacy, Link test enables the user to examine routinely and objectively the fit of a hypothesized model. The Link test for model specification conducted in this study indicates that the model is correctly specified or rather have no problem with specification in the model with expenditure. The report of the estimated chi-square of 0.55 for expenditure model, is insignificant as shown in Table 4.11. Thus, the models are adequate.

4.4. Mean Expenditure Effect of the Respondents 2015/2016

This part deals with the way and manner expenditures of the households was incurred. All the sources of expenditure of the households were identified and measured. This includes expenditure on food, health, education, clothing, assets, alcohol and tobacco and others. The mean values are used to show the variance of the various sources of total expenditure of the beneficiaries and non-beneficiaries. Table 4.5 discloses the mean expenditure of the respondents.

Table 4.5: Mean scores of expenditure sources 2015-2016

	Beneficiaries	*Non-beneficiaries*	*Difference*
HH Expenditure sources	Mean#	Mean#	Mean#
Food	28,366	21,859	6,507
Health	2,288	1,206	1,082
Education	4,214	2,162	2,052
Clothing	1,864	1,264	600
Assets	6,490	2,096	4,394
Alcohol and tobacco	2,102	1,952	150
Others	3,926	4,923	-997
Total	49,250	35,462	13,788

Table 4.5 reveals the details of the mean value of the respondents' sources of expenditure, the total expenditure and the difference between the beneficiaries and non-beneficiaries. Expenditure on food for the beneficiaries is: (mean = 28,366 naira), and non-beneficiaries is: (mean = 21,859 naira). The beneficiaries gained a mean = 6,507 naira above the non-beneficiaries. This is in line with the results of other studies (e.g. Bakhtiah & Touhidul, 2016; Thanh *et al.*, 2015; Imai *et al.*, 2010) that micro-credit leads to increase in access to more nutritious food.

As for health, for the beneficiaries it is: (mean = 2,288 naira) and for non-beneficiaries, it is: (mean = 1,206 naira). The calculation shows a mean = 1,082 naira spending on health care increased for the beneficiaries above the non-beneficiaries, signifying that the beneficiaries normally take their family members to better hospitals where they are provided with good health care services, unlike the non-beneficiaries that depend on hospitals that are cheap with poor service quality. This result is closely related to other findings (Bakhtiah & Touhidul, 2016; Devi, 2013; Ghalib *et al.*, 2015; Kesanta, 2015) that expenditure on health care of the beneficiaries has increased significantly.

As for expenditure on education, for beneficiaries, it is: (mean = 4,214 naira), whereas, for non-beneficiaries, it is: (mean = 2,162 naira). There is an improvement on the mean = 2,052 naira expenditure on education. Boateng *et al.* (2015) also found significant improvement in expenditure on education. It means that the beneficiaries are able to send their children to good schools as a result of their contact with the micro-credit program. In other words, the beneficiaries send their children to private schools and pay heavily to get a quality education, while, the non-beneficiaries send their children to public schools with low fees and poor quality of education.

As for expenditure on clothing, for the beneficiaries, it is: (mean = 1,864 naira), while for non-beneficiaries, it is: (mean = 1,264 naira). There is an increase in the mean = 600 naira of the beneficiaries above the non-beneficiaries. This result is closely related to Ghalib *et al.* (2015) where their study recorded an increase in expenditure on clothing.

Similarly, for expenditure on the assets of the beneficiaries, it is: (mean = 6,490 naira), whereas, for non-beneficiaries it is: (mean = 2,096 naira). There is a high increase in the expenditure on purchase of assets with a mean = 4,394 naira of the beneficiaries compared to non-beneficiaries. There is great improvement or increase in assets of the beneficiaries as compared to non-beneficiaries. The result of increase in assets is aligned with other findings Crepon *et al.*, 2014; Ghalib *et al.*, 2015).

The expenditure scores on alcohol, tobacco and snacks for beneficiaries is: (mean = 2,102 naira) and for non-beneficiaries, it is: (mean = 1,952 naira). A positive difference in mean = 150 naira is recorded for the beneficiaries. This indicates that consumption of alcohol, tobacco and snacks has increased slightly for the beneficiaries. This result is in line with the findings of Karlan and Zinman (2010).

Other expenditures include: ceremonies, festivals, and rent and electricity bills. For these, for beneficiaries, it is: (mean = 3,926 naira), consequently, for non-beneficiaries, it is: (mean = 4,923 naira). This shows a mean = 1,649 naira increase in other expenditure of the non-beneficiaries compared to the beneficiaries. This result indicates that the non-beneficiaries spend more on rent, ceremonies and festivals as compared to beneficiaries. The beneficiaries do not incur other expenditures, possibly due to their consciousness of the need to repay their loan, save and invest in businesses to make profit.

Table 4.5 above also presents the average total expenditure of both the beneficiaries and non-beneficiaries (beneficiaries mean = 49,250 naira and non-beneficiaries mean = 35,462 naira), respectively. There is a mean increase of 13,788 naira. The positive increase in the expenditure is in favor of the beneficiaries. This confirms the positive effect of micro-credit on the expenditure of the beneficiaries. In addition, it means that meeting expenditure needs comfortably is a sign of improvement or upliftment in the welfare status of the beneficiaries. This result is in line with other studies (Bakhtiar & Touhidul, 2016; Ghalib *et al.*, 2015) that micro-credit has a positive effect on the mean expenditure of the poor households. The expenditure of the households who have credit has increased more. As a consequence, increase in expenditure of the beneficiaries is an indication of improvement in their welfare and subsequently, a reduction in poverty.

Figure 4.1 shows the distribution of household mean sources on expenditure.

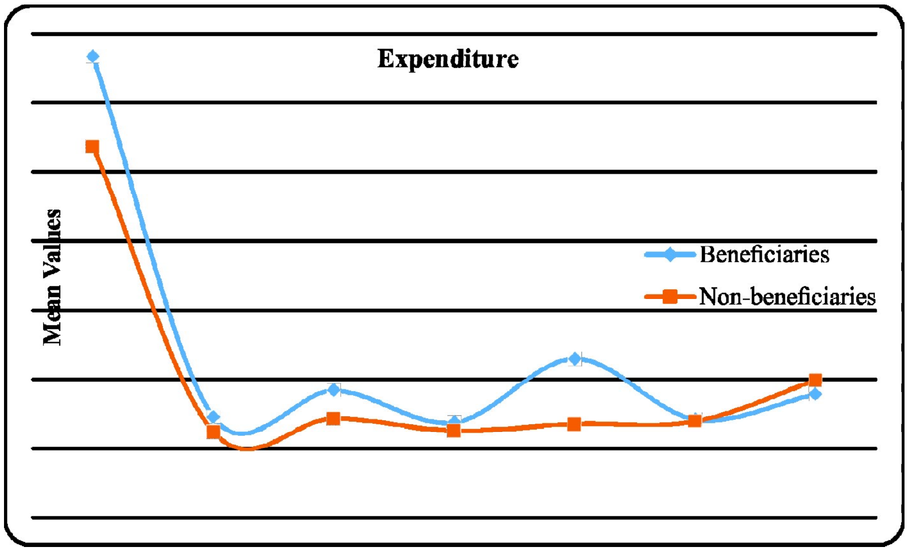

Figure 4.1: Distribution according to mean sources of household expenditure of the respondents

From Figure 4.1, both the beneficiaries and non-beneficiaries expenditure incurred on food doubled that of the other expenditures. From the trend, it can be deduced that the expenditure incurred by the beneficiaries on food is greater than non-beneficiaries expenditure. This result shows that beneficiaries are now able to meet their food needs due to their contact with micro-credit. Similarly, the beneficiaries' expenditure on health, education, clothing and assets has also increased on average above the non-beneficiaries. This is an indication that the beneficiaries are now able to fulfill most of their basic needs of having access to education, healthcare, clothing and food, unlike the non-beneficiaries.

However, expenditure on assets and alcohol, tobacco and snacks reveals some differences between the beneficiaries and the non-beneficiaries. The beneficiaries' expenditure has increased a little higher than the non-beneficiaries. Consequently, the non-beneficiaries have an increase in expenditure on other expenses more than the beneficiaries. This shows that the beneficiaries are aware of their obligations and so they do not want to spend unnecessarily on other expenditures that are not important.

5. Conclusion and Recommendations

The objective of this study was to assess the contribution of microfinance on household consumption expenditure. Basically, the findings of this study have shown a link between credit, savings, and supervision withconsumption expenditure of the households. The outcome of the Ordinary Least Squares regression models shows that credit, saving and supervision significantly and positively influence household consumption expenditure. The findings indicate that the newly introduced determinant gives the microfinance institutions a lead introducing supervision of micro-credit to beneficiaries. In addition, the beneficiaries mean consumption expenditure increases more than that of the non-beneficiaries. Most especially on food, clothing, health care, education. This could also indicate that microfinance beneficiaries used micro-loan to smooth consumption expenditure instead of investing on small business.This may be due to unfavorable business climate in the communities.

The study concluded that the beneficiaries of microfinance have improved their consumption expenditure in the households, thereby reducing poverty. The study's policy recommendations are that, since access to micro-credit has improved household expenditure as well as reduced poverty the government should take a positive step to enhance the business environment, infrastructures for small business to operate. In addition, the microfinance banks should provide training to their beneficiaries to enhance their knowledge of how and what nature of business they should go into, at a particular point in time, to make profit to improve their consumption expenditure.

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