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Abstract: The study examined the effect of access to Micro-credit loan on poverty reduction in Bauchi State, the case of Dass Local Government Area. Primary data were collected from beneficiaries and non-beneficiaries of micro-credit loan in the study area. A total of six hundred (600) questionnaires were administered on the respondents between March, 2013 and November 2014. Systematic Linear and Random Sampling Techniques were used to select three hundred (300) each of micro-credit beneficiaries and non-beneficiaries respectively. The questionnaires were administered by the researcher with the assistance of trained enumerators from Bauchi State Agricultural Development Programme, Dass Zonal Office. Descriptive Statistics, Principal Component Analysis and T-test were used in the analyses. Results indicated that, access to micro-credit loan enabled the beneficiaries to engage in, and expand income generating enterprises (p<0.001), which ultimately reduced their poverty status as compared to non-beneficiaries (p<0.001). Programme for the poor community members should be designed and targeted at the poor to avoid hijack by the non-poor.

Key words: micro-credit, poverty and reduction.

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I. Background Information

In Nigeria, about 66% of the population are poor and live in rural areas as small scale farmers, having land and labour as their major production resources and produce more than 70% of the total agricultural produce (Ayilaran and Arifalo, 2011). The main barrier to the transformation of the small scale, traditional and poverty driven agriculture to a more modern and productive sector is poverty and inability to acquire the necessary production technologies (Okon and Edet, 2012). The poor form the vast majority of those without access to primary health care, basic education (Mundi, 2011), and micro-finance (Tessie and Waribo, 2012).

Micro-credit poses vast potential to eradicate poverty by raising the poor from abject poverty to self-reliance (Ukeje, 2005). Micro-credit stimulates the agricultural sector by expanding trade boundaries and enabling it to grow progressively out of subsistence farming to large scale market production (Ande -de-montesquieu, 2009). Access to credit also allows people to select from diverse options such as starting a business, enrolling children in school and getting access to health care, including various services that constitute a healthy lifestyle (Srivastava, 2009; Jegede et al., 2011). Micro-credit helps in reducing the number of people living below the poverty line (Ochi et al., 2012). As people engage in businesses, they have the income that allows them further investment to expand and stabilize their businesses or even take more productive endeavors which ultimately lift them from poverty (Olatan, 2005; Ponce, 2009). More so, unemployment declines and working capacity increases as people get jobs, thus contributing to local, state and national economy (Srivastava, 2009).

There is no concise and universally accepted definition of poverty because of its effect on many aspects of human life. Poverty affects many aspects of human conditions including physical, moral and psychological (Ukeje, 2005; Kpakol, 2009; Ochi et al., 2012). This makes it difficult to associate it with a specific aspect of life. Poverty means being deprived materially, socially and emotionally. It steals the opportunity to have a life unmarked by sickness, a decent education, a secure home and a long retirement. Poverty is also viewed to be a state where an individual is unable to adequately cater for his or her basic needs of food, clothing and shelter, is unable to meet social and economic obligations, lacks gainful employment, skills and other basic necessities of life such as education, health, portable water and sanitation and consequently has limited chance of advancing his or her welfare to the limit of his or her capabilities (Omonona et al., 2008). In another way, Remeny (2000), systematically defined poverty, when he wrote: “don’t ask me what poverty is, because you have met it outside..."
my house; look at the house and count the number of holes, look at my utensils and the clothes I am wearing. Look at everything and write what you see. What you see is poverty”.

Statement of the Problem

Poverty is one of the intractable problems facing mankind today. It has been estimated that at least 50% of the poor in sub-Saharan Africa live in East Africa and Nigeria, as small-scale farmers than elsewhere in the world (Iigue, 2005; Akpan and Essien, 2007). The desire to reduce the size of poverty and curb its spread needs identification of the causes of poverty. This will facilitate the process of poverty management and planning.

The World Bank Poverty Task Force identified inadequate access to employment opportunities, destruction of natural resources leading to environmental degradation and reduced productivity as the causes of poverty in sub-Saharan Africa (Swope, 2005; Okoruwa et al., 2011). In addition to the above identified causes of poverty, rapid population growth, the use of local or inappropriate technology, low growth rate of the economy and prevalence of locative inefficiency are critical factors (Swope, 2005). The interaction of the above variables place a large segment of the society (the small-scale farmers) in a vicious circle of poverty which is characterized by low per capita income, low per capita income results in low level of savings accumulation, which further leads to low productivity (Lard and Banes, 2007). Low productivity can be identified as the source of vicious circle of poverty and the point where the circle must be broken by raising the investment level through micro-financing of the small-scale farmers to enhance productivity. This study attempted to show how poverty could be reduced among beneficiaries of micro-credit loans by answering this research question;

Does having access to micro-credit loan significantly reduce relative poverty?

In providing an answer to the aforementioned question, this study revealed that provision of micro-credit to the beneficiaries served as a starting point for them and other income generating activities that used the skills they already had to generate self employment. Furthermore, micro-credit helps beneficiaries in acquisition of modern and appropriate technology which if properly utilized leads to increased productivity. Increased productivity leads to high per capita income; high per capita income results in high level of savings accumulation, which if plunged into economic activities leads to breaking the vicious circle of poverty.

Justification of the Study

The concern over poverty and the need for its alleviation by means of improving the productivity, especially of the small-scale farmers, has led to the establishment of various institutions, including micro-finance programmes, as a means of breaking the vicious circle of poverty. Despite the efforts made, the scourge is yet to be reduced to a manageable level. The rationale is that, the poor lack adequate economic empowerment to improve productivity to break the vicious circle of poverty. Access to employment and other alternative sources of income would help to alleviate poverty by generating income, creating jobs, allowing children to go to school and empowering people to make choices that best serve their needs (Eluhaiwe, 2005; Nguyen, 2008).

Poverty has serious negative effects on the society both at individual and national levels. The lack of access to resources by individuals lead to a state of despair and inability to subsist and protect oneself against economic shocks, social, cultural and political discrimination and marginalization, which could in turn produce deviant behaviours such as violence, high rate of robbery, theft, thuggery, etc. (Ukeje, 2005; Yunusa, 2008). Empowering small-scale farmers will entail lifting more than 60% of Nigerian population out of poverty. This will in turn improve income and standard of living among the small scale farmers, especially, in Dass Local Government Area.

Objective of the Study

The objective of the study is to analyse the effect of micro-credit loan on poverty reduction in Dass Local Government Area.

II. Methodology

The Study Area: Bauchi State came into existence in 1976 from the then North Eastern State, with twenty Local Government Areas (LGA). It has a total land mass of 49,259.01km² (Adabo et al., 2006). The State is located between latitudes 9° 30’ and 12° 30’ north of the equator and longitudes 8° 50’ and 11° east of the Greenwich Meridian (Bauchi State Government Diary, 2012). The State is bordered by seven States, namely; Kano and Jigawa to the north, Taraba and Plateau to the south, Gombe and Yobe to the east and Kaduna to the west. The State has two distinct ecological zones, namely; the Sudan savannah and the Sahel. The Sudan savannah covers the southern part of the State whereas the later also known as the semi desert vegetation covers the western and northern parts. Rainfall regime ranges between 700mm to 1300mm (Adabo et al., 2006).

Dass Local Government Area (LGA) was created in 1976, as one of the twenty Local Government Areas of Bauchi State. It is located between latitude 10° N and longitude 10°E (Adabo et al., 2006). Dass LGA has an estimated land area of 456.731km² with a population of 200,380 people (NPC, 2006). The vegetation of
Dass LGA is sudan savannah. Food and cash crops such as maize, millet, rice, cowpea, ground-nut, sugar-cane, and vegetable constitute the major crops produced in the area.

**Sampling Procedure**
A sample of 300 micro-credit beneficiaries was selected through a random sampling process since micro-credit beneficiaries were considered homogenous in essential socio-economic characteristics. A systematic random sampling was used for the selection of another 300 non-beneficiaries of micro-credit.

**Data Collection**
Primary data were obtained from beneficiaries and non-beneficiaries of micro-credit in the study area. Secondary information was obtained from published literatures and was duly acknowledged. Semi-structured questionnaires were used to collect data from both beneficiaries and non-beneficiaries of micro-credit. The questionnaires were administered by the researcher with the help of trained enumerators from the Bauchi State Agricultural Development Programme in the study area. Data collected covered family structure; food; dwellings and asset related indicators.

**Analytical Techniques/Tools**
Data collected were analysed by the use of Principal Component Analysis (PCA). The PCA was applied to determine how information from various indicators (human resources; food security and vulnerability; dwellings and assets) were used to measure a household’s relative poverty status (Littlefield et al., 2003). The end result was a single index of relative poverty that assigned to each sampled household a specific value called a score, representing that household’s poverty status in relation to all households in the sample.

\[ P_i = \sum A_j Z_i \]  

Where;
- \( P_i \) = the \( i \)-th principal component are; maximum level of schooling; Ability to write; main occupation; type of cooking fuel source; age; source of drinking water; status of household head; number of meals; household size; gender; number of rooms; credit management; 30 days without food; cloth and footwear expenses for children; relation to head of household and availability of staple food. They are poverty indicators that correlated highly with the poverty benchmark; per capita expenditure on clothing and footwear.
- \( A_j \) = the co-efficient of the principal component (Factor loadings); maximum level of schooling (14.424); Ability to write (8.729); Main occupation (8.709); Type of cooking fuel source (8.303); Age (7.937); Source of drinking water (7.298); Status of household head (6.980); and Number of meals (6.618). These are the decision factors that depicted the causes of poverty in the study area. They are the factors that explained most of the variance observed, with minimum Eigen values above one.
- \( Z_j \) = the standardized values of \( X_j \): These are values assigned to each sampled household representing the household’s wealth status in relation to all sampled households; 0.0031 and -0.34671 are the mean values for beneficiaries and non-beneficiaries indicating their poverty status.

**Table 1: Screened poverty indicator variables**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Initial</th>
<th>Extraction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Household size</td>
<td>1.000</td>
<td>.608</td>
</tr>
<tr>
<td>Status of household head</td>
<td>1.000</td>
<td>.805</td>
</tr>
<tr>
<td>Relation to head of</td>
<td>1.000</td>
<td>.685</td>
</tr>
<tr>
<td>Gender</td>
<td>1.000</td>
<td>.662</td>
</tr>
<tr>
<td>Maximum level of</td>
<td>1.000</td>
<td>.831</td>
</tr>
<tr>
<td>Ability to write</td>
<td>1.000</td>
<td>.767</td>
</tr>
<tr>
<td>Main occupation</td>
<td>1.000</td>
<td>.637</td>
</tr>
<tr>
<td>Clothes/footwear expenses for children</td>
<td>1.000</td>
<td>.700</td>
</tr>
<tr>
<td>Type of cooking fuel</td>
<td>1.000</td>
<td>.567</td>
</tr>
<tr>
<td>Number of meals</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>1.000</td>
<td>.551</td>
</tr>
<tr>
<td>Credit management</td>
<td>1.000</td>
<td>.636</td>
</tr>
<tr>
<td>Source of drinking water</td>
<td>1.000</td>
<td>.660</td>
</tr>
<tr>
<td>30 days without food</td>
<td>1.000</td>
<td>.847</td>
</tr>
<tr>
<td>Number of rooms</td>
<td>1.000</td>
<td>.735</td>
</tr>
<tr>
<td>Staple food (maize)</td>
<td>1.000</td>
<td>.659</td>
</tr>
</tbody>
</table>

Extraction Method: Principal Component Analysis

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Ting Poverty Index Using PCA Method and Factor Analysis

A linear correlation coefficient procedure was used to filter poverty indicators to determine the variables that best appeared to capture differences in relative household poverty. The level and direction of correlation was tested with the bench mark poverty indicator: Per capita expenditure on clothing and footwear (PCEXPEND). Screened group of variables that highly correlated with the bench mark poverty indicator (PCEXPEND) were then selected, from which a final model, a poverty component score was obtained as the poverty index.

Theoretical Framework

The practice of micro-finance services for the poor has grown immensely since its beginning in the 1970s. It has become one of the most popular poverty reducing strategies in the world (CGAP, 2010a). Although micro-finance cannot solve poverty issues alone due to the complexity of poverty, there are many positive outcomes of micro-finance in alleviating poverty through providing self-employment possibilities and proving education (Chowdhury et al., 2005).

In the seventies, it was noticed that a large number of poor, especially rural women were not benefiting from anti-poverty strategies (Chambers, 2006). Investment into community development and agriculture did not always reach those that needed it the most (Cameron, 2005), until the time when Mohammad Yunus the Nobel Peace Prize Winner started to lend small amounts of money with the intention to only solve an immediate problem. Thereafter, many micro-finance institutions followed and provided the poor with an official way to access loan (CGAP, 2010a). Micro-finance institutions help the poor in setting up businesses, build up assets, consumption smoothing and risk management. Before this development the poor depended on moneylenders with extreme high interest rates, and were not welcome at conventional banks (Chigbue, 2005). By introducing micro-finance, self-employment and small enterprise development became possible for the poor (CGAP, 2010a).

Poverty is caused by context-specific and core elements. Context-specific causes include: political, economic and socio-cultural contexts, which for instance translate to inequality and vulnerability. Core causes are direct (nutrition deprivation) or indirect (poor access to food) but are almost always linked to consumption (Summer and Tiwari, 2009). Through the provision of micro-credit, micro-finance institutions want to stimulate and create opportunities for the poor to set up small businesses, since the poor depend on employment (Kimenyi, 2007). This is an aspect micro-finance contributes to poverty reduction. Also, skills to produce and market goods and human capital play major roles in the achievements of micro-finance institutions in reaching the poor. Since many programmes handle group or village lending structures, social capital is necessary for one to be able to join a programme, especially the chronically poor who are often located in desolated areas (CPRC, 2009). Isolated poor or individuals amongst the bottom poor that lack human and social capital tend not to become members of micro-finance institutions. In order for the poverty alleviation to be sustainable, an increase should be seen in productivity and income rather than in consumption. In order to do this, an increase in loan size will be necessary (CPRC, 2009). Provision of micro-finance can definitely contribute in a positive way to the lives of the poor in the areas of income, social development and vulnerability, but it cannot be an isolated solution and will need integration within the overall development of a country (Laderchi, 2007).

Policy objectives of micro-finance

In Nigeria, the formal financial system provides services to 35% of the economically active population while the remaining 65% are excluded from access to financial services (CBN, 2005; Akinboyo, 2007). These 65% are often served by the informal financial sector through NGO, micro-finance institutions, moneylenders, friends, relatives and credit unions. The policy objectives of micro-finance institutions as outlined by CBN (2005) were to:
(i) Make financial services accessible to a large segment of the potentially productive Nigerian population which otherwise would have little or no access to financial services,
(ii) Promote synergy and mainstreaming of the informal sub-sector into the national financial system.
(iii) Enhance service delivery by micro-finance to micro, small and medium entrepreneurs,
(iv) Contribute to rural transformation, and
(v) Promote linkage programme between universal or development banks, specialized institutions and micro-finance banks.

Micro-finance policy targets
The policy target of micro-finance as outlined by CBN (2005), were:
(i) To cover the majority of the poor but economically active population by 2020 thereby creating millions of job and reducing poverty,
(ii) To increase the share of micro-credit as a percentage of total credit to the economy from 0.9% in 2005 to at least 20% in 2020.
(iii) To promote the participation of at least 2/3rd of the states and local governments in micro-financing by 2015, and
(iv) To eliminate gender disparity by improving women’s access to financial services by 5% annually.

Effect of Micro-credit Loan on Poverty Alleviation

In September 2005, the UN reviewed the progress in reaching the targets of the Millennium Development Goals, with the primary aim of eradicating extreme poverty by the year 2015. After the meeting, micro-finance thus, emerged as a growing industry to provide financial services to the very poor (Okpara, 2010). The seven millennium goals are: eradicate extreme poverty; achieve universal primary education; promote gender equality and empower women; reduce child mortality, improve maternal health; combat HIV/AIDS, malaria and other diseases and ensure environmental sustainability. These are monumental steps in the direction of poverty alleviation (Ruben, 2007). There is ample evidence in literature to support the positive effect of micro-credit on poverty reduction as it relates to millennium goals. It can be used as a valuable means to eradicate poverty. Micro-credit has been proven again and again to be an effective method of poverty alleviation (Yunus, 1999; Murdoch and Harley, 2002; Jegede et al., 2011). Clients who participate in micro-finance programme have enjoyed increased household income, better nutrition and health, the opportunity to achieve higher education, a decrease in vulnerability to economic shock, greater empowerment and in some cases, the ability to completely lift themselves and their families out of poverty (CGAP, 2010a)

There is overwhelming evidence to demonstrate that families that participate in micro-finance programme enjoy an increase in household income (Murdoch and Harley, 2002; Shastri, 2009) and benefit from consumption smoothing and the ability to sustain gains over time. In Indonesia, a 12.9% annual rise in income from borrowers was observed while only 3% annual average rise was reported from non-borrowers (Swope, 2005). In Bangladesh, a 29.3% annual average rise in income was recorded among borrowers with 24% increase from non-borrowers (Swope, 2005). In Srilanka 15.6% was experienced among micro credit beneficiaries compared with 9% of non-beneficiaries (Khan, 2007) According to Darley and Harris (2004), clients in Lima, Peru reported only 28% of client live below the poverty line compared to 50% of non-clients . The Save the Children Foundation in London also confirmed a 50% increase in household income, while in India, 46% annual average rise in income was reported among borrowers with 24% increase reported from non borrowers. Also, an increase of 112% of assets for micro credit was noted (Encarta, 2009). According to Swope (2005), the income of micro-finance participants increased by 112% and the income of 90% of those families increased enough to lift them above the poverty line. The United Nations Children Fund (UNICEF) found evidence from a case study conducted in Vietnam that 97% of borrowers significantly increased their household income between 1994 and 1996. Participants most commonly attributed this improvement to the expansion of their income generating activity, reduced input cost as a result of buying in bulk or with cash or new activities of products made possible by access to credit and selling in new markets (Swope, 2005). According to Wright (2000), 58% of micro-credit beneficiaries crossed over extreme poverty line compared with 18% of non-beneficiaries. Micro-finance enables many impoverished families to earn enough income to rise above the poverty line and is therefore an effective method of poverty alleviation. In Tanzania, 63.0% of borrowers owned living house compared with 37.0% of non-borrowers (Salia, 2014). Similarly, in Kenya, micro financing accounted for more than 20.0% of adult employment and contributed between 12- 14% of Growth Domestic Product of Kenya (Makanga and Okibo, 2014)

Access to micro-finance services has been proven to be a powerful tool to help fight poverty. The impact is greatest (p< 0.001; from table 2) for the poor people when they have access to a wide range of financial services which they can invest in income generating and asset building activities to meet basic needs of life.

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increaseincomegeneratingactivity</td>
<td>168</td>
<td>61.9</td>
</tr>
<tr>
<td>Available market information</td>
<td>39</td>
<td>14.4</td>
</tr>
<tr>
<td>Bulk purchase adjusted rate</td>
<td>24</td>
<td>8.9</td>
</tr>
<tr>
<td>Cash transaction</td>
<td>40</td>
<td>14.8</td>
</tr>
<tr>
<td>Total</td>
<td>271</td>
<td>100.0</td>
</tr>
</tbody>
</table>

X²=200.159***Note=***significant at p≤0.001.Field survey, 2014.

Micro-credit beneficiaries were better than the non-beneficiaries in terms of income poverty reduction. The premise is that, the non-beneficiaries have a number of constraints; fewer income sources, lower education,
etc, which prevent them from investing in a high return activity. The average poverty score for micro-credit beneficiaries was -0.0031 compared with -0.34671 for the non-beneficiaries, suggesting that, on the average, non-beneficiaries were assessed as poorer than beneficiaries (p<0.001).

Table 3: Descriptive statistics of poverty index for beneficiaries and non-beneficiaries of micro-credit

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean</th>
<th>S.E mean</th>
<th>T-ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beneficiaries</td>
<td>-0.003</td>
<td>0.05772</td>
<td>3.689***</td>
</tr>
<tr>
<td>Non-beneficiaries</td>
<td>-0.346</td>
<td>0.0748</td>
<td></td>
</tr>
</tbody>
</table>

Note:***=Significant at p<0.001 Source: Field Survey, 2014.

III. Conclusion

A wide range exists between poverty index scores for micro credit beneficiaries and non-beneficiaries. This has proven that access to micro-credit loan can reduce poverty (p<0.001).

Recommendations

Poverty alleviation efforts should be done through job creation, small scale entrepreneurship and increased provision of formal and informal education facilities, improved sanitation conditions and a variety of related social and welfare services.

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