



EVALUATION OF MICROFINANCE SERVICES AND SOCIAL CAPITAL ON THE NUMBER OF LOANS RECEIVED BY SMES IN A DEVELOPING ECONOMY: A POISSON REGRESSION APPROACH

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ABSTRACT

This study examines the impact of microfinance services and social capital component on the number of loans receives by SMEs. The study used 375 sample in the North-Western Nigeria. Based on the result of the Poisson Regression Model, it indicates that both microfinance services (saving & number of training) are significant and positive relationship with number of loans received by SMEs. While social capital components (network, trust & social ties) are statistically insignificant and at different level. Similarly, other control variables that reveals significant influence on the number of loans received by SMEs, include number of employees and technological innovation. The finding of this study is significantly vital to government who are the regulatory authorities and policy makers of microfinance institutions. It also favoured both the microfinance institution as well as the SMEs sector (current SME owners & prospective entrepreneurs). It would enable them to be enlighten on how to access finance and other related services with regards to the selected variables employed in this study. The study concludes by providing some policy recommendation and suggestion for future research.

Keywords: Microfinance, Social Capital, Small and medium enterprise, Number of loans received.



1. INTRODUCTION

Microfinance grows with the nation's economic condition at a particular moment, which took part in the level of growth as well as per capita income of that country (Ashta *et al.*, 2016). Brau and Woller (2004) reported that an attempt to make microfinance services and products, the same as that of the formal financial system, proved abortive because microfinance mostly emphasizes SMEs lending for their establishment and expansion. Moreover, CBN (2005), posited that microfinance is one of the concrete development schemes and approaches that should be instigated and supported to reach the brave determination of lessening world poverty by half. They further argued that microfinance is created to feel the gap that universal banks left that is excluding SMEs and active entrepreneurs from financial services, for which they claimed high risk and cost that involved and with no physical collateral.

Access to finance (loan) plays an important role in boosting the performance of SMEs in both developed and emerging economies. Zeng, Xie, and Tam (2010) added the need for training, organizational and technological innovations also influenced SMEs performance. The basic role of microfinance was primarily to design a loan delivery system and offer sustainable financial services on reciprocal trust focused on the rural poor with no formal collateral related to the conventional banks (Jackson, 2012).

However, despite the contribution of microfinance institutions towards SMEs access to finance, the sector still faced huge challenges in accessing finance to effectively perform their transactions, especially in developing economy. This statement is in line with most literature which identified shortage of access to finance (loan) as among the main factors that impede the performance of SMEs (e.g., Kpodar & Andrianaivo, 2011; Okpara, 2011). Other factors that continue to tackle the performance of SMEs include lack of innovative technology and inadequate personal saving. Therefore, this study investigates the influence of microfinance services, and social capital on the number of loans received by SMEs in Nigeria.



2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Conceptual review

Microfinance grows with the nation's economic condition at a particular moment, which took part in the level of growth as well as per capita income of that country (Ashta *et al.*, 2016). Brau and Woller (2004) reported that an attempt to make microfinance services and products, the same as that of the formal financial system, proved abortive for the reason that microfinance mostly emphasizes SMEs lending for their establishment and expansion. Moreover, CBN (2005) posited that microfinance is one of the concrete development schemes and approaches that should be instigated and supported to reach the brave determination of lessening world poverty by half. Hence, this study concentrates on microfinance services that include savings and number of training, and social capital which include network amongst the employees of an enterprise, and social ties.

Underpinning Theories

The theories that underpinned this study include theory of Credit (Loan) and Macroeconomic Stability and theory of Social Capital.

Theory of Credit (Loan) and Macroeconomic Stability

The theory was developed by Stiglitz E. Joseph (2016). He provides a new framework for rational about monetary policy and macroeconomic activity. The theory argued that financial institutions should not just focus solely on the money supply or the treasury bill interest rate, but the vital factor is the accessibility of credit (loan), and the period which would be available. The theory emphasizes the role of credit (loan) in determining the level of economic activity. Therefore, in this study, the number of loans receives by SMEs from their financial institutions is the dependent variable, which relates with the assertion of the theory that lay its argument on the importance of credit (loan) given by (banks) financial institutions, microfinance inclusive. Since the activities and performance of SMEs from one area to another is associated with the economic activities.



Theory of Social Capital

Social capital is viewed as an investment in a social relationship that includes a social network, trust, and agreement within group or individuals through which they can get access to resources to enhance expected returns based on their contributory or communicative activities (Lin, 1999). Putnam (1995) asserted that social capital refers to the features of social organization or groups such as networks, norms and trust that enable coordination and cooperation for either firm or the general societal mutual benefit. He added that social capital is an assembly between person's social networks and standards of reciprocity, trust and honesty which rise within person's which will enhance the effectiveness of culture by enabling coordinated activities. The theory of social capital in this study is linked to the social capital components (proxies) in terms of networking, and social ties. These components normally rise within members that enhance coordinated activities for the procurement of their goals as supported by Putnam (1995).

Savings and Loans Received by SMEs

Studies have made tremendous efforts in assessing the impact of microfinance services and the growth and performance of SMEs from a particular area to another, and by using different microfinance services. It has been revealed that the critical basis of start-up capital is largely possessed from personal savings as a result of the difficulties observed in seeking a loan in microfinance and other financial institutions (Koko, 2014). In most of the developing nations microfinance bank's memorandum of engagement indicates that any firm or SMEs wishes to apply for a loan or credit from the bank should operate an active deposit account with the bank, as one of the criteria for acquiring a loan. The aim of this deposit is to guaranty the repayment of a loan that SMEs received from the banks as tangible collateral in most instances is not required from SMEs before the process of the loan. Savings also encourages the low-income earners or the entrepreneurs to have the habit of saving for future investment as stipulated in the regulatory and supervisory framework for microfinance in Nigeria by the CBN (2005).

Ahiawodzi and Adade (2012) examined the effect of access to loans on the growth of SMEs in Volta municipal in Ghana. 78 SMEs were sampled for the study and the multiple regression results show that access to the loan is positively significant in



affecting the growth of SMEs. Olowe, Moradeyo, and Babalola (2013) investigate the impact of microfinance on the growth of 82 sampled SMEs in the Ibadan metropolis. Using multiple regression analysis and Pearson correlation, they found a significant positive impact on the loan received from microfinance and the sales growth (SMEs growth) of SMEs. other studies that established a significant positive influence of microfinance savings and the loans received by SMEs include (Laetitia *et al.*, 2015; Odetayo & Onaolapo, 2016; Titus *et al.*, 2014 & Anane, Cobbinah and Manu, 2013).

On the contrary, there are studies which have not established significant relationship of saving and the loans received by SMEs. for instance, Belwal, Tamiru, and Singh (2012) assessed the impact of credit and saving services of microfinance on the economic improvement of women SMEs. Using questionnaires and interview methods of survey, they found that saving and loan services of microfinance in (Addis Ababa) Ethiopia have not contributed much to SMEs business growth. They asserted that the microfinance loan and saving services were not significantly contributing to the profitability growth of Women SMEs which resulted in just repayment of the loan and in some instances maintaining their existing businesses without improvement in their ability to save for future investment. Based on the argument above, this study hypothesized that:

H₁: Savings has a positive influence on loans receives by SMEs

Number of Training and Loans Received by SMEs

Microfinance offers training to SMEs in developing nations like Nigeria in order to make use of the loan they received effectively. Belwal, Tamiru, and Singh (2012) recommended that microfinance and other financial institutions should be encouraged to train SMEs effectively on access to loans and the utilization of the loan received. This is because microfinance services such as advisory services, per loan and pre-loan training enhanced the growth of SMEs (Akpan & Nneji, 2015). Training is an essential factor in the development and performance of SMEs (e.g., Ayopo & Ibidunni, 2015; Kalui & Omwansa, 2015). Ayopo and Ibidunni (2015) examined the impact of marketing of nonfinancial services of microfinance services on the performance of SMEs. Using the method of survey in-depth interview and a sample of 502 SMEs, the results of the multiple regression analysis revealed that



there is a positive impact between the non-financial services (training, weekly meetings and pre-loan training) of microfinance and the SMEs performance. This result is supported by Kalui & Omwansa (2015) which found a significant positive influence of training on SMEs financial performance.

Despite many studies that reveal the significant and positive impact of microfinance training on loan, however, some studies also found a negative relationship. Wilfred *et al.* (2013) found that nonfinancial services of microfinance such as training skills and counselling, are insignificant and negative in explaining their relationship with the employment generation of SMEs which affect their performance. Vijaykumar and Naidu (2015) looked at the impact of microfinance training on the level of income and improvement on the growth of 52 sampled SMEs. The study reveals that there is no significant difference between the SMEs that are trained, and untrained SMEs based on their level of income and their entrepreneurial skills. This study focused on the SMEs in a single district in a village of Ramnagara, Karnataka, India. Therefore, the study may not be generalized to various areas due to differences in socioeconomic factors. Other studies with similar findings (negative or no significant relationship) include (McKenzie & Woodruff, 2013; Kisaka & Mwewa, 2014). Therefore, with regards the literature, this study hypothesized that:

H₂: Training has a positive influence on loans received by SMEs

Network and the number of Loans Received by SMEs

previous studies explore the relationship between networking and financial performance of SMEs. For instance, Stam, Arzlanian, and Elfring (2013) investigated a relationship between social capital and SMEs performance and analyzed the link between SMEs personal networks and the performance of SMEs. Using meta-analysis study, they found a strong and significant positive relationship between the network diversity of SMEs and the firm performance. Cooke and Wills (1999) generated a sample of 20, 17 and 19 SMEs from Denmark, Wales and Ireland respectively. They revealed that the government programs provide the SMEs with the sufficient fund that enables them a link with external innovation network.

Additionally, Tundui and Tundui (2013) examined the impact of social capital on SMEs performance, using ordered probit method, they revealed that SMEs who receives advice and support from informal networks in their businesses in Tanzania



observed improvement in their profit than SMEs who have not received such benefits. On one hand, Zeng, Xie, and Tam (2010) sampled 137 SMEs in China and explored the relationships between different cooperation networks and SMEs performance on innovation. They used the method of structural Equation modeling and found a significant positive relationship between research firms' network, intermediary institutions network, interfirm cooperation network, and SMEs performance on innovation.

Despite the studies that exhibit a positive relationship nevertheless there are studies which reveals negative relationship between network amongst employees and the loans of microfinance. For instance, a study conducted in Bulgaria by Manev *et al.* (2017) assessed the role of competitive approaches and social capital for entrepreneurial performance. They found a negative moderating effect of networking for the relationship of cost leadership with the performance of a firm. Also, they asserted that entrepreneur's network makes an impact in determining the influence of strategies on performance by possibly keeping variation and cost leadership approach. Moreover, Boso, Story, and Cadogan (2013) examine the impact of network ties, entrepreneurial orientation and market orientation on firm performance. Using a sample of 203 enterprises in Ghana. They found that business and social network ties outside the organization increase the performance of the firm. based on the literature there is a scarcity of studies that focus on the impact of microfinance services and the SMEs factors on the number of loans received by SMEs. Hence this study hypothesized that:

H₃: Network has a positive influence on the loans received by SEMs

However, based on the literature review, there are limited or no study that clearly relates the network as one of the components of social capital with the number of loans received by SMEs. which this study explores the relationship.

Trust and Loans Received by SMEs

Several studies have discussed many characteristics of the aspect of organizational trust in different views in trying to establish a relationship between trust and firm performance. Brown *et al.* (2015) modelled four ordered probit specifications for firm performance in the UK and discovered a positive relationship between employee trust and the financial performance of a firm. Kiprotich (2014) established



a positive impact between trust and the profitability and sales growth (performance) of Kenyan SMEs. In the same vein, Ofori & Sackey (2010) analyzed data from a survey of 100 registered firms in Ghana club, using the method of Analysis of variance (ANOVA) they found that there is a strong positive relationship between trust and firm performance. Similarly, Tundui and Tundui (2013) Indicated that an effective social capital, rely on building and maintenance of trust. Adding that social networks and norms of behaviour is also paramount towards achieving an excellent social capital. The result is in support of the findings of Cooke (1999).

On contrary, Andrej and Hajdeja (2005) examine the effects of different types of trust on SMEs performance. They analyzed 284 and 210 SMEs in Bosnia and Slovenia, respectively, and highlighted that interpersonal trust negatively affects the performance of SMEs. In the same argument, Guo (1999) examined the impact of owner-manager trust on the performance of SMEs and revealed a negative influence of trust on the performance of low technology SMEs. Other studies that found a negative effect of trust on firm performance include Selnes and Sallis (2003). Based on the forgoing literature, this study hypothesized that:

H₄: Trust has a positive influence on loans received by SMEs

Social Ties and Loans Received by SMEs

Empirical evidence shows that researchers adhered to the social capital theory by employing various component, proxies or factors of social capital dimensions, based on the nature of a study, level of economic activities in a particular location, and the nature of a particular firm either large, small or medium enterprises (e.g., Ofori & Sackey, 2010; Zeng, Xie, & Tam 2010).

Previous studies examine the influence of social ties on SMEs performance. For instance, Dai *et al.* (2015) explore the relationship between social ties, external social capital and the financial performance of a firm. Using 125 sample, the study found positive effect between social ties, external social capital with firm's financial performance. In addition, Lee *et al.* (2001) examined the effect of social ties (internal capabilities) and external ties on the performance of small and start-up firms. Using a sample of 137 enterprises in technology-based Korean firms, they found an important positive effect on the social ties indicators, entrepreneurial orientation, technological innovation, and financial resources investment in sales growth. Yi and



Lin (2011) assessed the interactions effects in terms of social ties with absorptive capacity and social ties with entrepreneurial orientation on SMEs performance. The study established that there is a positive relationship between utilization of social ties that allow SMEs to have access to diverse and vital resources and their performance. In terms of the interaction between the two social ties on the performance of SMEs, the study added that social ties and absorptive capacity have a positive collaboration effect on the performance of SMEs.

On contrary, there are studies which found a negative impact of social ties on loans received by SMEs. For example, Onkelinx, Manolova, and Edelman (2015) explored the drawbacks and the benefit of social capital and revealed a negative effect of social capital on the performance of communication industry. They argued that social context in which internal social capital is created and employed has a significant impact on its form of usage". Similarly, Kiprotich (2014) assessed the influence of social capital on the growth of SMEs in Nairobi Kenya. The study employed 'descriptive research design' and a sample of 100 SMEs in (Nairobi County). They found a negative impact on internal social capital (social ties) and the sales growth of SMEs. However, Su, Atmadja and Sharma (2015) found an insignificant relationship between the weak ties and lending group of SMEs. With regards to the literature, there is relatively zero or shortage of studies that clearly reveals a relationship between social ties and the number of loans received by SMEs. As such, this study hypothesized that:

H₅: Social ties has a positive influence on loans received by SMEs

3. METHODOLOGY

In order to achieve the objective of this study, data were gathered from 375 registered (Small and Medium Enterprise Development Agency of Nigeria and National Bureau of Statistic (SMEDAN & NBS, 2012)) SME owners in the North-Western Nigeria. the study population is 16043. Based on the table of Krejcie and Morgan (1970) as well as formular developed by Dillman (2007) the study arrived at the sample of 375.

The number of loans receives by SMEs is a count data which is used in this study as the dependent variables. Poisson distribution represents the technique used in this study to achieve the objective which is to assess the influences of microfinance

services and social capital on the number of loans received by SMEs. In Poisson distribution, variable in each circumstance is usually taking a finite number of values. Though, sometimes count data can also be referred to occasional occurrences such as winning more than one lottery within two months or having arrested two or more times in four weeks. In a nutshell, the distribution that is specifically suited for count data is the Poisson distribution. According to Gujarati (2004), the variance of the Poisson distribution is equal to its expected value say, λ that is: $E(X) = \text{var}(X) = \lambda$.

Since this model measures count data (number of occurrences of an event) as in the number of loans received by SMEs in this study from MFIs, the method of analysis which deems fit is the Poisson Regression Model (PRM). As pointed out by Hausman, Hall and Griliches (1984) and Wooldridge (2002) that Poisson distribution is measuring the impact of a number of occurrences in an event (count data) usually infrequent event.

The model assumes that a count data cannot have a normal distribution, with regards to the continuation of the standard distribution variable which can take on all values. By taking every value, the distribution would vary from normal. Therefore, the nominal distribution for count data is through the Poisson distribution. Additionally, the concern of the model is based on the effect of the explanatory variables on the “Y” (dependent variable). As a result, the condition of the Poisson distribution on “X” (independent variables) must be put into consideration. The Poisson distribution is determined entirely by its mean, as such the need is to specify $E(Y|X)$. For instance, the probability of an event like Y_i dependent variable (count variable) given the vector of covariates, X_i (independent variable) is given by:

$$f(Y|X) = \frac{e^{-\mu_i} \mu_i^{Y_i}}{Y_i!}, \quad \text{for } Y_i = 0, 1, 2, \dots \dots \mu_i > 0 \dots \dots \dots (1)$$

Where: $Y|X$ represent the dependent variable, which is the number of loans received by SMEs, μ_i represent the mean and the equivalent variance of the estimation and Y_i is the vector of the dependent variable. Therefore, the mean parameter μ_i that is the conditional mean number of events in period (i) is a function of the vector of covariates in period (i) it is depicted as:

$$E(Y_i|X_i) = \text{var}(X_i) = \mu_i \dots \dots \dots (2)$$



The Poisson regression model assumes that the conditional variance equals the conditional mean. That is to say; the data are equally dispersed. Empirically the model to be applied in order to achieve the objective, in relation to assessing the number of loans received by SMEs in a year, is the Poisson regression model which is specified as:

$$NOL = \frac{e^{-\mu_i} \mu_i^{Y_i}}{Y_i!} \dots \dots \dots (3)$$

Therefore:

$$Y_i = \beta_0 + \beta_1SVN_i + \beta_2NTR_i + \beta_3NTW + \beta_4TRT_i + \beta_5SCT_i + \beta_6NOE_i + \beta_7TCI_i + \epsilon_i \dots \dots \dots (4)$$

Where:

Y_i Represent the DV (NOL= Number of Loan Received by SMEs)

SVN = SMEs savings with microfinance

NTR = Number of Training

TRT = Trust

NTW = Networking

SCT = Social Ties

NOE = Number of Employees

TCI = Technological Innovation

$\beta_1, \beta_2, \dots \beta_9$ = Parameter Estimates.

4. RESULTS AND DISCUSSION

This section presents the discussion of the results. It comprises the discussion of the demographic profile of SMEs in the study area, descriptive statistics, correlation analysis, Pearson’s correlation coefficients and Poisson regression result.

Descriptive Statistics

Demographic Profile of the SMEs in North-Western Nigeria

This section depicts the demographic profile of the relevant SMEs involved in the survey in North-Western, Nigeria. The items of the variables involved in this section represent the different sectors of the SMEs, the different location (seven States in the North-Western Zone), the number of employees, the level of technology of an SME,



the age of the firm, the type of ownership, and the value of the assets of the SMEs in the study area. Therefore, it is shown in Table 1.

Table 1
Demographic Profile of the SMEs in North-Western Nigeria

Features	Frequency	Percent (%)	Cumulative percent (%)
Nature of operation (Sector)			
Manufacturing	75	20.00	20.00
Agriculture	72	19.20	39.20
Furniture	59	15.73	54.93
Service	50	13.33	68.27
Education	38	10.13	78.40
Medical	8	2.13	80.53
Building	21	5.60	86.13
Others	52	13.87	100.00
Business location			
Kano	126	33.60	33.6
Kaduna	80	21.33	54.93
Katsina	55	14.67	69.60
Kebbi	39	10.40	80.00
Sokoto	31	8.27	88.27
Jigawa	24	6.40	94.67
Zamfara	20	5.33	100.00
Number of employees			
Less than 50 (SEs)	340	90.67	100.00
50 – 199 (MEs)	35	9.33	9.33
Technological innovation			
Traditional	86	22.93	22.93
Semi-modern	208	55.47	78.40
Modern	81	21.60	100.00
Firm age			
Less than a year	15	4.00	4.00
1 – 5 years	112	29.87	33.87
6 – 10 years	211	56.27	90.13
11 – 15 years	32	8.53	98.67
Above 15 years	5	1.33	100.00
Type of firm ownership			
Single owner	322	85.87	100.00
Co-owners	53	14.13	14.13
Asset value			



Less than N50M	338	90.13	100.00
N50M – Less than N500M	37	9.87	9.87

Note: Nature of operation; Business location; Number of employees; and Technological innovation are part of the independent variables (IVs) in this study; below N1m= below One (1) million Naira (Nigerian currency) = (USD 2,739.726 equivalent)

Table 1 shows that the manufacturing sector has a relatively highest number (20%), testifying that most of the SMEs in the study area engaged in the manufacturing industry. The other industry which the SMEs in the study area focused on is the agricultural industry, with about 19.20 percent; this is a result of the culture of the people in the area, which generally adopt or inherited the substantive farming activity from their ancestors. After the Agric sector, SMEs in the study area concentrated on the furniture activities with about 16 percent. The reason is that most of the youths that were not opportune to extend their level of education to the higher level engaged in this kind of work (furniture) which provides their families with immediate and basic needs. It has been contended that most of the middle-aged group (40 – 49) in the study area, which engaged in furniture making, believed to be successful. The service sector has about 13.33 percent of the SMEs that engaged in the industry, followed by the educational sector with 10.13 percent, while the medical sector is 2.13 percent, which shows that the concentration of medical activities is hugely dominated by a large organization in the North-Western zone of Nigeria. The building industry is 5.6 percent, and other industries all together have approximately 14 percent.

On the other hand, in terms of location out of the seven States in the study area, Kano State alone is represented by 33.60 percent, which is the highest representation of SMEs in the study area. The reason behind this is that Kano State is regarded as the second largest state in terms of economic activities and happens to be the largest state in terms of population in Nigeria. The second-largest state in terms of SMEs in the North-Western zone, with 21.33 percent in Kaduna State. This is because the State is the second largest with regards to population, after Kano State, with about (6, 113,503). Furthermore, despite that, Kaduna State in terms of highest LGAs, is number 4 with (23) LGAs in the zone, yet the State is the second largest in terms of economic activities in the region. Katsina State took 14.67 percent on the location of SMEs in the study area, followed by Kebbi State with 10.40 percent representation of MSEs. Sokoto State possessed 8.27 percent. Kebbo and Sokoto States share



borders, cultures, and relatively close in terms of their population. These similarities also relate to Zamfara State, which is both relatively located in the same domain. On the other hand, Jigawa State has 6.40 percent and Zamfara State is represented by 5.33 percent of SMEs in the area.

Furthermore, with regards to the number of employees, the categories of employees on (less than 50), which are usually dominated by small enterprises, are the highest percentage of SMEs in the study area, with 90.67 percent. The medium enterprise category that is between (50 – 199) employees covers only 9.33 percent. This could be the result of the difficulty of accessing loan (finance) that SMEs faced in North-Western Nigeria, which may not give them the advantage of employing more workers as well as the shortage of capital assets to sufficiently perform their businesses towards achieving their stated objectives. Furthermore, the categories of technological innovation adapted in this study comprised of traditional technology, semi-modern technology, and modern technology. The SMEs in North-Western Nigeria concentrated on using semi-modern technology in their business activities. The semi-technology is relatively an improved form of the traditional technology that was used in most of the rural areas of northern Nigeria as a result of the shortages of infrastructural facilities and the right conducive environment in the areas. Therefore, SMEs in the study area that used semi-technology is approximately 55 percent, followed by those that used traditional technology with 23 percent, while those that used modern technology are 21.6 percent.

Furthermore, the majority of SMEs in North-Western Nigeria fall within the ages of (6 – 10) years with 56 percent, followed by the category of ages of SMEs from (1 – 5) years that is about 30 percent. The category of SMEs that existed from (11 – 15) years in the area is 8.53 percent and that of SMEs that existed just less than a year is 4 percent, on the other hand, the SMEs that existed more than 15 years of age in the study area is only 1 percent. In consideration of the ownership of these SMEs, Table 1 further indicated that a single owner dominated the SME sector in the study area with approximately 86 percent. This is as a result of the conflicting issue of financial distrust that generally existed amongst most firms (SMEs) that are more than one owner. The SMEs owned by more than one owner in the study is 14 percent.

Moreover, the value of the assets used in this study was adapted based on the category that was provided by SMEDAN, and NBS (2012). SMEs that have worth



of assets of less than 50 million is 90 percent. While the second category of SMEs with assets value between 50 to less than 500 million is about 10 percent. Therefore, it is observed that SMEs with assets value of less than 50 million Naira dominated North-Western Nigeria.

Frequency Distribution of the Study Variables

The section displayed frequency distribution of the non-Likert scale and dichotomous independent variables and their related items. The variables include the microfinance savings, training received or otherwise, types of training received, and social ties. Table 2 present the frequency distribution of the variables and their items.

Table 2.
Frequency Distribution of Independent Variables on items relating to Savings and Training

Variable	Frequency	Percent (%)	Cumulative Percent (%)
Savings			
Zero (0)	78	20.80	20.80
Below N20,000	92	24.53	45.33
N21,000 – N30,000s	116	30.93	76.27
N31,000 – N40,000	62	16.53	92.80
Above N40,000	27	7.20	100.00
<i>Training related item</i>			
Training received or otherwise			
Yes	321	85.60	100.00
No	54	14.40	13.87
Training received			
Leadership	6	1.60	1.60
Motivation	21	5.60	7.20
Management of Resources	260	69.33	76.53
Technical	34	9.07	85.60
Never received training	54	14.40	100.00
Social Ties			
Yes	366	97.60	100.00
No	9	2.40	2.40

Based on savings in Table 2, it shows that those SMEs that save within the range of 21,000 to 30,000 Naira have the highest percentage at about 31 percent, indicating



that SMEs in North-Western Nigeria is not saving a considerable amount. It might be a result of their level of profitability or sales growth which is below expectations. As such, they have to settle their expenses that include the payment of salaries and allowances of their employees and other general expenses. As indicated in the Table, SMEs that save below 20,000 Naira have 24.53 percent which indicated the direction of the low level of SMEs savings in the study area, followed by about 21 percent which is the SMEs that do not save any amount in their respective banks. This shows that such SMEs in the area do not relatively emerge huge profit and maybe such SMEs that are young (newly established SMEs). While SMEs that save within the range of 31,000 to 40,000 have 16.53 percent and SMEs that save above 40,000 are represented by only 7 percent. In general, the level of savings of SMEs in their banks depends on some factors that may include their profitability and sales growth, which also affect the level of services offered to them by MFIs.

Furthermore, the number of SMEs that received training (Yes) is approximately 86 percentage, and the SME that does not (No) receive training services in the study area is about 14 percent. The training services offered by microfinance to the SMEs in the study are dominated by the utilization of the loan received (management of resources) from their respective MFBs. Table 5.3 indicated that microfinance who provided a loan to SMEs focused on training SMEs on how to utilize such loans productively. For instance, training on the management of resources has about 69 percent, while training on the technical issue has about 9 percent, and training on motivation is 5.6 percent. However, training on leadership is insignificantly 1.6 percent. The SMEs that did not receive training of microfinance in the study area is about 14 percent.

On the other hand, the social ties (variable) question was asked on whether (Yes) or not (No) the employees of the SMEs interact and work together for the firm's interests and goals. Approximately 98 percent of responses admitted (Yes) that their employees interact and work together for the interest and goals of their organization. This scenario might be the course of the level of commitment from both the management and the employees of the organization in discharging their responsibilities. It shows that the management is providing excellent facilities to the employees in terms of the right conducive working place, incentives as well as the employee's salaries and wages. As such, the employees deliver their best input for the benefit of the management. While an insignificant 2 percent (No) revealed that



employees in these SMEs do not interact and work together toward achieving the interest and goals of the firm. This may be a result of the inability of the management to discharge their stated responsibilities that will motivate the employees. It could also be a result of a lack of sufficient finance to take care of their regular financial activities, which may be a result of the influence of profit, sales, or both.

The result of the descriptive statistics including mean, standard deviation, minimum, maximum, and median is presented in Table 2. The result depicts that the mean of ROE is 15% (0.15), a minimum and maximum score of -17% (-0.17) and 46% (0.46), while the median is not far from the mean with a value of 14%(0.14). This portrays that the sampled firms are averagely doing well even though some are running at a loss as indicates by the minimum value of ROE. However, the standard deviation of 0.13 means that the sampled firms are not widely varied in terms of generating returns during the period under review. For BSZ, it has a mean of 9(8.74), minimum (6), maximum (15), and a median of 8 members, while the standard deviation stood at 1.70. In this regard, the sampled firms are strictly adhering to the Nigerian revised CG code of 2011 which requires all publicly trading companies in Nigeria to have a minimum board size of 5 members.

Frequency Distribution of the Dependent Variables and their Items

These represents the dependents variable and their items, which include the loan increase or otherwise and the reason for receiving a loan. Based on the reasons for receiving loan the respondents could answer more than one option. Table 3 present the frequency distribution of the dependent variables and their items.

Table 3
Frequency Distribution of the Dependent Variable and the Related Items

Variable	Frequency	Percent (%)	Cumulative Percent (%)
Loan received or otherwise			
Yes	343	91.47	100.00
No	32	8.53	8.53
Reason for receiving a loan			
Started a new business	38	11.08	11.08
Developed an existing business	255	74.34	85.42
Used as working capital	40	11.66	97.08



Built a project	7	2.04	99.13
Others	3	0.87	100.00

Based on Table 3 the frequency of those that received loan is (about 92 %) while those that does not receive loan is (about 9%). With regards to the various reasons for the collection of the loan, it can be seen in the Table with five items (reasons).

Pearson Correlation Result

Table 4
Correlation Matrix of Number of Loan Received by SMEs Model

	NLR	SVN	NTR	TRT	NTW	SCT	NOE	TCI
NLR	1.0000							
SVN	0.4979*	1.0000						
NTR	0.6993*	0.5770*	1.0000					
TRT	0.0633	0.1055*	0.1144*	1.0000				
NTW	0.0245	0.0322	0.0251	0.4829*	1.0000			
SCT	0.1302*	0.1151*	0.1329*	-0.0050	-0.0014	1.0000		
NOE	-0.3069*	-0.2962*	-0.2657*	-0.0011	-0.0728	0.0503	1.0000	
TCI	0.1500*	0.2771*	0.1455*	-0.0409	-0.0262	-0.2058*	-0.2125*	1.0000

Note: NLR=number of loans received; SVN=monthly savings; NTR=number of trainings received; TRT=trust; NTW=networking; SCT=social ties; NOE=number of employees; TCI=technological innovation.

The correlations between the number of loans received by SMEs and savings (0.498) and that of a number of loans received and the number of training (0.699) in Table 4 display positive but weak and significant relationships, similar to the correlation between number of loans received by SMEs and social ties (0.1302). While, based on technological innovation and the number of loans received shows positive correlation (0.1500) but weak.

Goodness-of-fit (gof)

The goodness of fit is used to determine whether the model fits the data or not. It measures how well do the observed data correspond to the expected (fitted, assumed, or expected) model (values). When doing this in Stata software, two outcomes are involved: (1) deviance goodness-of-fit and (2) Pearson goodness-of-fit. Deviance

goodness of fit follows a chi-squared distribution with degrees of freedom equal to the difference in the number of parameters. As such, it measures how closely a model's predictions are to the observed outcomes (Bartlett, 2014). However, the Pearson goodness-of-fit measures the relative difference between the observed and fitted values. The degrees of freedom for the test rely on the sample size and the number of terms in the model. The Pearson statistic has an exact chi-square distribution for standard data. For non-normal data like the Poisson distribution and the binomial distribution, the statistic approaches the distribution asymptotically. Therefore, Table 5 shows the results of the goodness-of-fit test in this study:

Table 5
Result of goodness-of-fit Test

Goodness-of-fit Type	Goodness-of-fit values	Prob>Chi2	Null hypothesis
Deviance	122.297	1.000	Accept
Pearson	106.044	1.000	Accept

Base on the results of goodness-of-fit from the other immediate Table, the null hypothesis, which states that the model in this study is correctly specified, cannot be rejected, hence accepted. This is because a probability (Prob>Chi2) value of 1 indicates equidispersion, greater than 1 indicates over-dispersion, and below 1 portrays under-dispersion. Therefore, since the value for Prob>Chi2 for both deviance and Pearson is 1.000 each, equidispersion is said to be present and the model is fit.

Independent for Observation Test

In Poisson regression, modelling observations are assumed to be independent of one another (Nagin & Land, 1993). This implies that one observation cannot provide information on any other observation in the model. Therefore, to test whether observations in the Poisson regression model are independent of one another, the comparison between a standard model, based errors, and robust errors need to be conducted to ascertain their differences. Based on the estimated model, the error term is generated for both the standard model base, robust errors, and information on their differences. Thus, it is presented in Table 6.

Table 6
Test of Independent for Observation

Differences	Frequency	Percentage	Cumulative Frequency
0	375	100.00	100.00
Total	375	100.00	

Based on the result presented in Table 6 there are no differences between the standard model errors and robust errors. Therefore, the observations in the Poisson regression model are independent of one another.

Link test for Model Specification (Poisson Regression)

Another important post-estimation test of specialty in Poisson regression analysis is the link test. The link test utilized here is based on the idea developed by Tukey (1949), which was described further in the work of Pregibon (1980). Specifically, the link test is a test of the specification of the dependent variable. It is regarded as a test that is conditional on the specification; the independent variables are not correctly specified. The link test is grounded on the premise that regression or regression-like equation is appropriately specified. In regression, there is a specification error known as the link error, which translates that transformation or link function of the dependent variable is required to relate to the IVs (Pregibon, 1980) appropriately. Based on the idea of Tukey (1949) as suggested by Pregibon (1980), the significance of the link test is based on the linear predicted value (\hat{y}) and the linear predicted value squared (\hat{y}^2) that is generated by the command, link test. It is depicted in Table 7.

Table 7
Result for Linktest (Poisson Regression Model)

Numloan	Coef.	Std. Err.	T	P> t	[95% Conf.	Interval]
\hat{y}	1.1435	0.2063	5.54	0.000	0.7391	1.5479
\hat{y}^2	-0.1455	0.1794	-0.81	0.417	-0.4969	0.2060
\hat{y}^3	-0.0091	0.0852	-0.11	0.915	-0.1762	0.1588

Note: Numloan= Number of loans received by SMEs, coef. = Coefficient Std. Err. = Standard error.

Having obtained a significant linear predicted value, ($\hat{\mu}$) with coefficient 1.1435 and probability for the link test, it implies that the predictors in which the independent variables are meaningful to the estimated model. Furthermore, the null hypothesis which assumes that the model is correctly specified was not rejected because the p-value of the linear predicted value squared ($\hat{\mu}^2$) is not significant (-0.1455) that is ($p > 0.05$). Hence, the Poisson regression model is said to be correctly specified.

Results of the Poisson Regression Model

As a count data, Poisson regression is used in this study in explaining the influence microfinance services and SMEs factors of the number of loans received by SME in North-Western Nigeria. Accordingly, the results of the Poisson regression are shown in Table 8.

Table 8
Poisson Regression Result for Model (No. of Loan Received by SMEs)

Variables	Expected signs	β	Standard Error	z	p>z
Intercept	?				
Saving: Below 20,000	+	0.259	0.091	2.83	0.005
N21,000 – N30,000		0.262	0.085	3.06	0.002
N31,000 – N40,000		0.275	0.096	2.87	0.004
Above N40,000		0.277	0.131	2.12	0.034
Number of Training	1 +	0.376	0.179	2.10	0.036
2		0.896	0.172	5.21	0.000
3		0.995	0.175	5.67	0.000
4		1.312	0.198	6.62	0.000
5		1.265	0.232	5.44	0.000
Trust	+	-0.036	0.042	-0.85	0.393
Networking	+	-0.007	0.027	-0.26	0.798
Social Ties: Yes	+	0.075	0.155	0.49	0.628
NOE: Less than 50 (SME)	+	0.143	0.062	-2.30	0.022
TI: Semi Technology	+	-0.023	0.047	-0.48	0.628
: Modern Technology		0.062	0.058	1.06	0.288

Note: ***, and **, is significant at 1 percent, and 5 percent respectively, TI= Technological innovation, NOE= Number of Employees



The results indicate that microfinance services such as the level of savings and the number of trainings have a significant effect on the number of loans received by SMEs. The effect of the different levels of the savings can be interpreted as follows. For a level of savings below N20,000 Naira, it has a probability of increasing the number of loans received by SMEs with about 0.26 percent at a five percent level of significance. Similarly, in the range of savings between N21,000 to N30,000, it has a probability of increasing the number of loans received by 0.26, indicating that an increase in the level of savings increases the expectation of the number of loans received by SMEs at a one percent level of significance.

In a category of saving between N31,000 to N40,000, it tends to increase the number of loans received by SMEs with about 0.28 percent at a one percent level of significance. This infers that an increase in the level of the saving increases the expected number of loans received by SMEs. Also, in the category of savings above N40,000, the results state that there is a likelihood of increasing the number of loans received by SMEs with about 0.28 percent at a five percent level of significance. The significant influence of saving on the number of loans received might be as a result of the terms of engagement between some MFBs and SMEs, which enable the SMEs to get access to the loan after having a deposit account with the MFBs as part of the agreement. Concerning training, it might be because of the number of training SMEs receive as they obtain a loan.

Moreover, the number of trainings received by SMEs is also associated with the number of loans received by SMEs in the different categories. Thus, a single training (1) has a probability of increasing the expected number of loans received with about 0.38 percent at a five percent level of significance. In the same vein, two training in a year has a probability of increasing the expected number of loans received by SMEs by approximately 0.90 percent at a one percent level of significance. Similarly, for the category of 3 and 4 times in a year, training has an own tendency of increasing the expected number of loans received by SMEs with about 0.99 and 1.31 percent at a one percent level of significance both. Also, the number of trainings of 5 times in a year, it has a probability of increasing the expected number of loans received by SMEs with about 1.27 percent at one percent level of significance.



On the other hand, amongst the SMEs, (control variables) significant factors include some categories of the number of employees. Compared to the medium enterprise's category (50 – 199 employees), the category of small enterprises (less than 50 employees) has a lower effect on the expected number of loans received by SMEs with about 0.14 percent and it is at a five percent level of significance. It indicates that amongst the SMEs, SEs have more advantages on the number of loans received over other MEs in relation to the number of their employees. The result shows that there is no significant influence concerning social capital component such as trust, networking and social ties, including technological innovation.

5. CONCLUSION AND RECOMMENDATIONS

This study examines the influence of microfinance services (savings, number of training) and social capital (trust, network, social ties) on the number of loans receives by SMEs in Nigeria. based on the Poisson regression results, it shows that savings and the number of trainings has positively influenced the number of loans received by SMEs. It infers that an increase in the level of savings and the number of trainings would lead to an increase in the number of loans received by SMEs. This result is directly related to the policy and guidelines of the CBN (2012) which clearly stated that microfinance should offer training and saving services to SMEs which would enable them to invest and utilized the loan received effectively. Though, the number of employees regarding the SEs category and location based on Kano, and Kaduna States locations, negatively influenced the number of loans receives by SMEs. Additionally, other SMEs factors in the Poisson regression model such as trust, networking, social ties, technological innovation, and business location, are insignificant in explaining their influence on the number of loans received by SMEs.

The result indicates that the services of microfinance have a direct influence on the number of loans receives by SMEs. Therefore, a sound policy that will come out with an effective structure in terms of microfinance Bank's required shared capital which would enable them to deliver effective financial and non-financial services to the SMEs. The government can make more avenues in providing financial support to MFIs and SMEs in the form of subsidy or reduction of the tax to reduce the number of MFBs that tend to close operation as a result of insufficient finance to take care of



their business activities. This would inevitably reduce the number of SMEs that would have been served by microfinance.

In a nutshell, this study is one of the few studies that jointly study the impact of microfinance services with social capital like trust, social ties and network on the number of loans received by SMEs in developing economy. Other studies could consider other microfinance services and some SMEs factors as well as other social capital component.

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APPENDIX

Variables		
Perceived Performance	Items Measurement	Source
Savings,	Please indicate the range of the savings (Amount of deposited.in Naira value) of your organization with a micro-finance bank	CBN (2005), Belwal et al. (2012)
Microfinance Training	Number of trainings obtained from MFIs by SMEs	Babajide (2012)
Trust	1) The management here can be relied upon keeping their promises. 2) The management here deals with the employee's honesty. 3) The enterprise here treats employees fairly. 4) The management is honest in understanding their employees' opinion(s).	Brown <i>et al.</i> (2015)
Networking	1) Your firm encourages information for the benefit of its employees. 2) Your firm gets support from group social network participation. 3) Your employees here, jointly tackle problems at their level.	Dai <i>et al.</i> (2015)
Social ties	1) Do employees in your organization interact and work together for their interests and goals	Kwon, S. W. & Adler, P. S. (2014) Maurer, Bartsch, & Ebers (2011)
6.	Number of Employees	Firms number of employees' 1) From 10 to less than 50: SEs coded (1) 2) From 50 to 199: MEs coded (0)
		Fang, Nofsinger & Quan (2015), SMEDAN & NBS SURVEY (2012)
7.	Technological Innovation	Firm's level of technology (Traditional, technology, Semi-Technology, and modern technology)
		Wolf, Stricker & Hagenloh (2013)