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BUSINESS MODEL AND ORGANISATIONAL PERFORMANCE OF MICROFINANCE BANKS IN OYO STATE, NIGERIA

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Abstract

Microfinance emerged as the provision of financial services to clients outside the mainstream financial system. it provides small-scale financial services to marginalized clients and also serves as an effective tool for financing microentrepreneurs through group lending, progressive lending, regular repayment schedules and collateral substitutes. However, this sector faces a huge challenge that threatened its core asset and survival. For instance, more than 438 Microfinance Banks (MFBs) license has been revoked by the Central Bank of Nigeria (CBN) since 2010 due to the considerable changes in competitive conditions during the last two decades which have made the markets more dynamic, more competitive and, above all, more complex. Companies now compete not only through products and services, but through the business model. Therefore, this study investigated the effect of Business Model Dimensions on Portfolio Quality of MFBs in Oyo state, Nigeria. An *Ex Post Facto* research design was adopted for the study. The population comprised of 23 licensed MFBs in Oyo state as at February 2018 which had been in operations since 2010. The sample size (5 MFBs) was determined by Krejcie and Morgan's formula. Secondary data which were sourced from the annual reports of the MFBs for the period 2011 to 2017 was used for this study. Data were analyzed using both descriptive and inferential statistics (simple and multiple regression analysis). Findings revealed that Business Model Dimensions had joint significant effect ($F_{(3, 26)} = 3.523033$, $p<0.05$) on Portfolio at Risk of MFBs in Oyo state, Nigeria. The study recommends that the management of MFBs should initiate policies, program and procedures aimed at enhancing appropriate model alignment, innovation and analysis so as to improve performance through improved portfolio quality.

Key words: Business Model Dimensions, Microfinance, Microfinance Banks, Organizational performance and Portfolio Quality

Word counts: 298

INTRODUCTION

Microfinance emerged as the provision of financial services to clients outside the mainstream financial system. In the past decades, it has become increasingly visible and praised for its potential to become a profitable tool of economic development because it provides small-scale financial services to marginalized clients not served by the mainstream banking system. Also, it serves as an effective tool for financing microentrepreneurs and micro, small and medium enterprises (MSMEs). This is done through innovative approaches which include: group lending, progressive lending, regular repayment schedules and collateral substitutes. The range of its service offerings to the poor and MSMEs include: loans, savings facilities, insurance, transfer payments and even micro-pensions. The debate on the starting date of the global microfinance is still ongoing, even as some scholars look to antecedents in 19th century credit cooperatives (Banerjee & Jackson, 2017). Others point to significant events in informal financial mechanisms like rotating saving and credit institutions (Rutherford, 2009). However, the modern microfinance movement dates to Muhammad Yunus's early microcredit experiments in 1976. Those experiments led to the establishment of Grameen Bank in Bangladesh under an official ordinance in 1983, which in turn inspired the first global Microcredit Summit Campaign, launched in February 1997 at a summit in Washington, DC, attended by over 2,900 delegates from 137 countries. At that point, just Thirteen million microfinance customers were counted globally. The summit featured the start of a nine-year campaign to reach One hundred million of the world's poorest families by 2005. The 1997 summit has been followed by 17 annual summits. (Microcredit Summit Campaign's State of the Summit Report 2015).

According to Ehigiamusoe (2008), Microfinance practices can be traced to several centuries in Nigeria, these existed in form of Self-Help Groups, Rotary Credit, Savings and Investment Unions. Due to the inadequacies of available funds for their sustainability, their outreach was limited. In view of this, the Nigeria government intervened through policies, programs and projects such as Family Economic Advancement Program (FEAP), Farming Loans and Advance Assurance System (FLADS), Nigeria Agricultural and Cooperative Bank, Peoples Bank of Nigeria, Nigeria Industrial Development Bank, National Poverty Eradication Program. This led to some gains which were not sustainable, hence the need for a public- private sector approach by the Nigeria government through the Central Bank (Ogwumike, 2002). In 2005, The Central

Bank launched the Microfinance Bank Regulatory framework which was aimed at converting community banks and other related microfinance entity to microfinance banks in order to regulate their activities (Ehigiamusoe, 2008). However, despite these interventions, this sector is confronted with several challenges particularly, its core asset and this threatens its survival and sustainability. According to MIX Market report, Portfolio at Risk increased from 2.44% as Dec. 2015 to 3.8% as at Dec. 2016. Thus, it is common to hear that the success rate of MFB is still low as shown in the constant revocation of operation licenses of MFB.

Recently, researchers' attention has been drawn to the role of business model in organizational performance. In fact, it is evident in business and management literature that the importance of Business model in organizational performance cannot be over emphasized. Since the beginning of the 21st century, business models have increasingly been discussed in scientific research (Casadesus-Masanell & Ricart, 2010; Pigneur, Oliveira & Fererreira., 2011; Wirtz & Daiaer, 2017) and management practice (KPMG, 2006; Enkvist, Naucler & Oppenhein, 2008). This increasing significance is not least related to intensify competitive conditions in the last two decades. If companies want to remain successful in globalized and increasingly digitalized markets, they had to continually adjust to varying market conditions and cope with a highly dynamic and competitive business environment (Desyllas & Sako, 2012). Companies not only compete through products and services, but through their business models. This means that, every company forms a unique business model for its business activities with the use and allocation of various resources, which will directly affect its financial performance. Many scholars believe that business model played an important role in the performance of enterprises. Markides and Charitou (2004) argued that business model is a source of competitive advantage and it gives firm an edge over others.

Arising from the foregoing, the objective of this study is to establish the effect of business model dimension on portfolio quality of Microfinance Banks in Oyo state, Nigeria. To achieve this objective, the paper addressed the research question – "What is the effect of business model dimension on portfolio quality of Microfinance Banks in Oyo state, Nigeria?" The paper is organized as follows: the introductory section of the paper dealt with the background issues that led to the topic, while section one focused on the review of related literature in line with the concept, theory, and empirics relating to the study variables. Section two was devoted to

methodology adopted for the study with special emphasis on the population and sample size determination together with data collection. In the third section, the data collected were presented, summarized, analyzed and corresponding findings were discussed, while the fourth and the last section covered the conclusion and recommendations flowing from the findings of the study.

1. LITERATURE REVIEW

A business model is a model that reveals the combination of production factors which is used to implement the corporate strategy and the functions of the actors involved (Wirtz, 2011). According to Eriksson and Penker (2000), a business model is an abstraction of how a business function. Amit and Zott (2001) argued that, a business model depicts the content, structure, and governance of transactions designed so as to create value through the exploitation of business opportunities. Afuah (2004), further stated that, a business model is a framework for making money. Teece (2010) opined that a business model articulates the logic and provides data and other evidence that demonstrates how a business creates and delivers value to customers. It also outlines the architecture of revenues, costs, and profits associated with the business enterprise delivering the value. According to Ahokangas, Juntunen and Myllykoski (2014), business model concept can be seen from content, process or context points of view which describes it as a company's logic of value creation and earning. Furthermore, Kajanus, Lire, Eskelinen, Heinonen and Hansen (2014), stated that there are three main components or building blocks in a business model. The first is the value proposition, which forms the firm's offering and clarifies its value to the customer; the second is the channel and partner list (or network architecture) that shows how customer value is produced and delivered. Finally, the revenue building block translates the two former elements into revenues and costs. This study defines business model as a simplified and aggregated representation of the relevant activities of a company in terms of financial structure, products and/or services offering as well as the analysis of company's major activities.

Business model design (BMD) is one of the components of business model. This is part of an interrelated elements that are core to the fundamental question asked by business strategists (Teecee, 2010). A good business model yields value propositions that are compelling to customers, achieves advantageous cost and risk structures, and enables significant value capture by the business that generates and delivers products and services. In designing a business model

correctly, it must be figured out at the implementing stage commercially viable financial architectures which are critical to enterprise success. According to Mars (2012), all new businesses have to deal with the challenge of designing a sustainable business model. According to Rai in an exploratory study of fourteen (14) Microfinance institutions over a period of six (6) years, financial structure is an important ratio for investors and lenders (including depositors) and indicates how much of a safety cushion the institution has to keep so that creditors are not at risk. The design of a firm's business model is measured precisely on the themes of novelty, financial structure and/or efficiency, is related with performance of the focal firm. This study measured financial structure as total equity divided by total asset.

The urgency to develop innovative business models is intensified by fierce competition among enterprises, the need to satisfy increasing customer requirements, and the rapidly changing environmental conditions (Beqiri, 2014). The 2008 IBM Global CEO Study (Lambert, & Davidson, 2013) uncovered two aspects of strategic business model innovation: when to make changes and how to execute the changes. The IBM study found that the need to change can arise from factors external to the enterprise such as economic climate and industry transformation and from internal changes such as new product or service offerings or modified revenue models (Lambert, & Davidson, 2013). According to Hartmann, Oriani, and Bateman (2013) business model innovation can be defined as the modification or introduction of a new set of vital components; internally focused or externally engaging that assist the firm to create (offering such as products and services) and appropriate value. Business model innovation allows firm to enhance value creation and appropriation (Teece, 2010). It involves the discovery and adoption of fundamentally different modes of value proposition, value creation, and/or value capture (Markides, 2006), therefore, business model innovation can redefine what a product or service is, how it is provided to the customer, and how it is monetized. There are four primary dimensions or components of a business model namely: value proposition (product/ service and market segment), value architecture (organizational and technological infrastructure of an organization), value network (inter-firm relationships of an organization and its position in the value chain), and value finance (costs and revenue models) recognized by Al-Debei and Avison (2010) as the most occurring in the business model literature. One useful definition of innovation is a 'multi-stage process whereby organizations transform ideas into new/improved products, service or

processes, in order to advance, compete and differentiate themselves successfully in their marketplace' (Baregheh, Rowley, & Sambrook, 2009).

Abdelkafi, Makhotin, & Posselt, (2013) stated that analyzing the existing model is the foundation of business model Innovation. This is important as it will help in determining whether a model is or will be viable, valuable and relevant to the current business climate. Business model is the pattern of economic activity; cash flowing into and out of the business for various purposes and the timing thereof that dictates whether or not you run out of cash and whether or not you deliver attractive returns to your investors (Mullins & Komisar, 2009). One of the ways of analyzing a model is the use of Business Model Canvas which has gained recognition globally. The Business Model Canvas divides a business model into nine blocks, providing an integrated visual representation that facilitates the discussion and the debate about the business (Bertels, Koen, & Elsum, 2015).

<table>
<tr><td rowspan="2">Key Partner</td><td>Key Activities</td><td rowspan="2">Value proposition</td><td>Customer Relationship</td><td rowspan="2">Customer Segment</td></tr>
<tr><td>Key Resources</td><td>Channels</td></tr>
<tr><td colspan="2">Cost Structure</td><td colspan="3">Revenue Structure</td></tr>
</table>

Figure 1.: Business Model Canvas.
Source: (Bertels, *et a.l*, 2015).

The Business Model Canvas is used because of the following reasons; it is the most widely used tool for developing and analyzing business models, as expressed in Bertels *et al.* (2015); particularly the key Activities: The most important activities in executing a company's value proposition. Value proposition refers to the collection of products and services a business offers to meet the needs of its customers. This is to ensure that the activities of banks are in accordance with its set objectives. This could be measured by calculating the ratios in order to determine the performance using ratio analysis with respect to the key activities as outlined in the business model, such as lending, deposit management, etc. The ratio to measure loan quality is usually derived from non-performing loan (NPL) and portfolio at risk (PAR) (Rahmawati, 2008).

Non-Performing Loan demonstrates the ability of bank management in managing the problem of financing provided by the bank. Therefore, the higher this ratio the worse the Portfolio quality of banks that caused the greater number of problem loans, the likelihood of a bank in the greater problematic conditions. The lower the value of NPL, the better the quality of bank's assets (Masyhud, 2004).

Similarly, Organizational performance is one of most important variables in the area of management research. Although the concept of organizational performance is very common in academic literature, its definition is not yet a universally accepted concept (Gavrea, Ilies & Stegereen 2011; Gitonga, Kamara, & Orwa, 2016). According to Armstrong (2006), organizational performance can be measured in several ways depending on the industry of interest. Morin and Audebrand, Camus and Michaud (2017) stated that, systemic component which is one of the four components of organizational outcome addresses the issues concerned with the quality of goods and services as well as protect the financial structure of the organization. Loan portfolio constitutes the largest operating assets and source of revenue of most financial institutions particularly MFBs. More often than not, the loan of the financial institution is a key asset that generates the major share of the MFBs income (Jeanne, 2012). The quality of loan portfolio determines the financial performance of firm because it has significant impact on the financial performance of the firm. Derrick et al (1998) argued that loan portfolio is the lifeblood of each lending institution, since the success of the MFB depends on how well it managed its portfolio. However, some of the loans given out become non-performing and adversely affect the profitability and overall financial performance of the lending institutions.

Empirical works have shown diverse effects of business model on the performance of organizations. Vermmer (2016) studied the relationship between models and firm performance as measured through business model components by using value creation, market factors, and sources of differentiation and revenue models as variables in mobile game industry. The study showed that the business model components are especially able to significantly predict financial performance. Also, the study revealed that several business model components have differing relationships with both financial and non-financial performance. Khemraj and Pasha (2014) examined the determinants of non-performing loan (NPL) for banks in Guyana-South America. The findings from the study revealed that the appreciation in the local currency increases NPL

while the increase of GDP lowers the NPL. The findings further revealed that higher interest rates and lending large amount of loans increases the NPL. Similarly, Magali and Qiong (2014) found that rural SACCOS in Tanzania had bad portfolio with large number of NPL because of poor loan portfolio management. Compassionateness in loans follow-up and inadequate skills in loan portfolio management were the reasons for loans defaults and poor portfolio for rural SACCOS in Tanzania. Mileris (2012) found that the quality of loan portfolio in banks is influenced by macroeconomic factors such as GDP, inflation, interest rates, money supply, industrial production index, current account balance and others. Tadele and Rao (2014) revealed that deterioration of loan portfolio for MFBs in Andhra Pradesh in India was caused by loans disbursement without taking into account borrowers' repayment capacity, non diversification of loans portfolio, poor record keeping, accounting and management information systems, lack of staff control and corruption. Aballey (2009) revealed that huge bad loans portfolio for African Development Bank (ADB) in Ghana was largely caused by ineffective loan monitoring and poor credit selection. The study recommended training, effective loan monitoring, effective collateral, establishment of agriculture infrastructural facilities and use of credit bureaus as strategies for reducing the bad loans and improving the quality of loan portfolio for ADB in Ghana. Haas et al (2010) revealed that determinants of effective loan portfolio for banks in 20 transition countries were ownership styles, size and legal protection of creditors. Lagat et al (2013) found that credits' risk identification, analysis, monitoring, evaluation and mitigation influenced the lending portfolio for SACCOS' in Kenya. Crabb and Keller (2006) found that group lending methodologies reduce the loans portfolio at risk compared to individual loans lending. The same results were confirmed by Gómez and Santor (2008) for MFBs in Nova Scotia Canada, Diagne and Zeller (2001) in Malawi, Ofuoku and Urang (2009) in Nigeria, Satgar (2003) for Grameen bank in Bangladesh and Al- Mamun et al (2011) in Malaysia. Similarly, Nawai and Shariff (2010) revealed that the group lending is effective loan portfolio management in their paper which reviewed the literatures describing the determinants of repayment performance in microcredit programs. George, Miroga, Ngaruiya, Mindila, Nyakwara, Mobisa, Ongeri Mandere, and Moronge, (2013) found that the effective loan portfolio management had a direct influence on the profitability of the banks in Kenya. Imeokparaia (2013) found that despite effective management of loan portfolio and credit function is fundamental for the banks to earn interest income as revenue, it has not affected the performance of banks in Nigeria.

Diversification of loan portfolio might be used as loans default risk mitigation strategies for MFBs as recommended by Moti, Masinde and Mugenda (2012). David and Dionne (2005) found that clients defaulted their loans because of leniency procedures in loans processing and appraisal. While plethora of studies have looked at the various predictors of organizational performance in terms of portfolio quality, studies focusing on the effect of business model dimensions on organizational performance with respect the portfolio quality of MFBs have been limited. In view of the observed gap in literature with respect to the dearth of studies on the effect of business model dimension on organizational performance of MFBs in Oyo state, Nigeria, this study is undertaken to fill this gap in extant literature.

From theory, it could also be argued that business model can also enhance organizational performance. The Resource Based View (RBV) theory propounded by Wenerfelt in 1984, discussed extensively firm resources and sustained competitive advantage. The theory stated that business organizations must have valuable, rare, inimitable and non-substitutable resources to have a sustainable competitive advantage In addition, Teece (1991) stated that the basis of the resource base theory, is that successful organisations will find their future competitiveness on the development of distinctive and unique capabilities which may often be intangible in nature. Hence, the essence of business model which is defined by the firm's unique resources and capabilities for organizational performance (Rumelt, 1991).

The model can be expressed as:

$$PQ_{it} = f(BMD_{it}, BMI_{it}, BMA_{it})$$

$$PQ_{it} = \beta_0 + \beta_1 BMD_{it} + \beta_2 BMI_{it} + \beta_3 BMA_{it} + eit$$

Where; β_0 is the intercept; $\beta_1, \beta_2, \beta_3$ are parameters to be estimated and eit is the error term

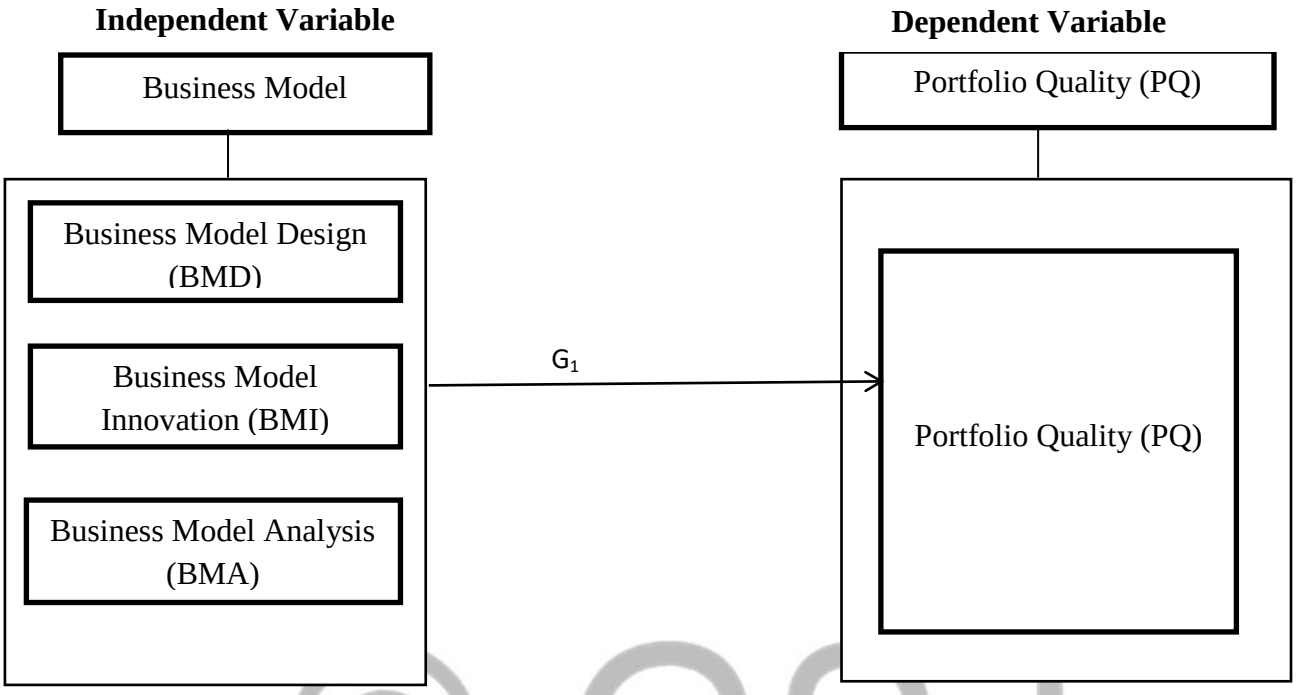

Figure 2: Simplified theoretical framework

Source: Computed from literature reviewed, 2018

2. METHODOLOGY

This study adopted *Ex Post Facto* research design and secondary data was collected from firm's annual reports. An *Ex Post facto* research design was considered suitable for this study because it explores possible causal relationship amongst repeated observations of same variable over a long period of time and across different firms which are available in historical documentations and financial statements. The population for this study consists of 23 MFBs licensed by the Central Bank of Nigeria as at February 2018, and have been in existence since 2010. The sample size of 5 MFBs was determined by Krejcie and Morgan formula. This formula is based on accurate statistics and easy reference. The data used for this study is secondary data which was sourced from the published Annual reports for the period of 2010 to 2017.

3. DATA ANALYSIS

Analyses of data proceeded with the verification and cleaning of the data to ensure that the data generated were clean, correct and useful. This was followed by the various analyses in line with the main objective of the study, which is to determine the effect of business model dimensions on organizational performance of MFBs in Oyo state, Nigeria. To accomplish this, both descriptive and inferential statistics was employed. The descriptive statistics measured were mean, median, maximum value, minimum value, standard deviation, Skewness, Kurtosis, Jarque-Bera and its probability statistics for the variables involved in this study. Table 1 showed skewness, kurtosis, and jarque berra statistics of the transformed series of portfolio quality (PQ), business model design (BMD), business model innovation (BMI), and business model analysis (BMA) in order to determine the series suitable for running the Ordinary Least Square regression based on the normality test determined from the P-value of the Jarque Berra statistics.

Table 1:Summary Statistics (Dependent and Independent Variables)

	PQ	**BMD**	**BMI**	**BMA**
Mean	32.23462	0.267961	6.935484	161930.4
Median	25.82383	0.216816	6	10000
Maximum	106.7423	0.699707	15	2458136
Minimum	0	0.063201	0	0
Std. Dev.	27.34506	0.165986	3.482676	444516.3
Skewness	1.135	1.056036	1.007859	4.669949
Kurtosis	3.862914	3.415573	3.553039	24.55978
Jarque-Bera	7.617631	5.985001	5.643254	713.075
Probability	0.022174	0.050162	0.059509	0.874981
Observations	31	31	31	31

Source: Author's Computation using Eviews 9 (2017)

Table 1 showed the summary statistics of all the variables under study in their raw form. Table 1 indicates a wide distribution of the portfolio quality data over the period of study was on average of 32.23462 with a standard deviation of 27.34506. The mean value indicated that there were no outliers in the series since the standard deviation of the series was less than the series. It was further revealed that on average, business model design (BMD) contributed about 0.267961 to portfolio quality; business model innovation (BMI) contributed about 6.935484 to portfolio quality; and the business model analysis (BMA) contributed about 161930.4 to portfolio quality

during the seven years under study. The median of 0.216816 and 6.00000 for BMD and BMI respectively and close to the mean of 0.267961 and 6.935484 indicating a close to normal distribution. In the case of their skewness, they were positively skewed. The skewness values were close to zero except business model analysis (BMA), while their mean values were far from zero. Hence, the variables were standardized normal variables and thus do not violate the properties of a standardized normal distribution. Business model analysis (BMA) variable was thereafter transformed to attain normality of the series. Regarding kurtosis that measures the peakedness of the distribution of the variables, from the descriptive statistic table, the Kurtosis value for most of the variables were greater than 3, thus we concluded that portfolio quality (PQ), business model design (BMD), business model innovation (BMI), and business model analysis (BMA) are leptokurtic. Also, Jarque-Bera statistics and its probability value indicated that only two variables satisfy these criterions which are PQ and BMA.

3.1. Diagnostic Test

The variables when paired had a correlation of less than 0.80 which was the threshold to permit retention of all the variables under study because the coefficient of determination improves as described in Woodridge (2004). Also, the Levin-Lin-Chu unit-root test revealed that almost all variables were stationary at Level (BMD, BMI, BMA and PQ) had p values less than significance level of 0.05 which led to rejection of the null hypothesis (that the variables had unit root). Only one variable that is portfolio quality was found to be stationary after first differencing. The differencing however leads to loss of degrees of freedom although this is not detrimental given the fact that the variable attained stationarity at only first differencing that is losing one time period.

Finally, in order to determine the best fitting model of each of the hypothesis, this study adopted Hausman specification test where the fixed effects model specification was compared to the random effects model.

3.2. Data Analysis, Interpretation and Discussion

Table 2: Portfolio Quality, Business Model Design, Business Model Innovation, and Business Model Analysis of Micro Finance Bank in Oyo State, Nigeria

Year	PQ	BMD	BMI	BMA
2010	0	0.520261	6	150000

2011	5.363804	0.459909	7	6300
2012	0.313315	0.49461	8	14050
2013	0	0.645703	8	0
2014	0	0.531993	8	0
2015	0	0.505809	8	0
2016	13.62679	0.360454	8	22500
2017	14.60764	0.346447	8	10000
2010	0	0	0	0
2011	0	0	0	0
2012	0	0	0	0
2013	1.713204	0.405095	0	50000
2014	5.086257	0.132008	4	0
2015	7.891069	0.178994	4	0
2016	34.89272	0.169699	4	0
2017	53.95127	0.353383	4	9500
2010	13.87936	0.216816	13	186750
2011	11.84646	0.224234	13	203450
2012	22.25798	0.168954	13	0
2013	25.82383	0.085934	13	0
2014	22.76221	0.142547	15	218250
2015	30.85493	0.180864	15	152900
2016	13.04913	0.150153	8	272113
2017	10.40214	0.132255	9	235667
2010	1.413927	0.146835	5	0
2011	74.74725	0.105068	5	0
2012	61.23432	0.112631	5	216000
2013	43.9379	0.235512	5	4500
2014	33.58548	0.248174	5	126500
2015	36.35016	0.212817	5	6000
2016	40.63558	0.275153	5	0
2017	35.38313	0.276066	5	570375
2010	100	0.119362	5	0
2011	11.4404	0.104565	5	196800
2012	19.79958	0.063201	5	100000
2013	35.99518	0.190919	5	0
2014	51.44532	0.291371	6	5000
2015	18.6162	0.37161	6	2458136
2016	64.44812	0.699707	6	0
2017	106.7423	0.666418	6	8500

Source: Annual Reports of the selected Microfinance Banks in Oyo state, Nigeria.

Table 2 showed variations in portfolio quality, business model design, business model innovation, and business model analysis of Micro Finance Bank in Oyo State, Nigeria. The data revealed upward and downward trend in portfolio quality of the selected Microfinance banks. Furthermore, there were variations in business model design, business model innovation, and business model analysis across the Micro Finance Banks. The data presentation revealed an inverse relationship between Portfolio quality and Business Model Analysis. Therefore, there is likelihood that with improvement in business model analysis with particular reference to the banks will lead to improvement in portfolio quality of the selected banks.

To determine the business model dimensions on portfolio quality of Micro finance bank in Oyo State, Nigeria, Panel regression was used with the independent variables being business model design (BMD), business model innovation (BMI), and business model analysis (BMA). The dependent variable is portfolio quality. Before the analysis, a series of diagnostic tests were carried out to ascertain the statistical soundness of the models and whether they could be used for forecasting.

Serial Autocorrelation Test (LM Test)

the output EViews offers three versions of the test, Breusch-Pagan LM, Pesaran scaled LM and Pesaran CD version. The results show that the Breusch-Pagan LM and Pesaran scaled LM had a p-value of 0.0156 and 0.0077 respectively leading to the acceptance of the null hypothesis of autocorrelation. The Pesaran CD result had a p-value of 0.1264 confirming the rejection of the null hypothesis of no autocorrelation. This implies that there is an evidence for the presence of serial correlation. The variables were transformed for analysis.

Hausman Test

The Hausman test was conducted and the chi-square value was 21.428750 with a probability value of 0.0001 which showed high statistical significant at the 5% significance level. Therefore, the null hypothesis which states that the individual specific effects are constants within the panel was rejected. Thus, the fixed effect estimator was found to be more appropriate than the random effect estimator. The fixed effect model is preferred in the presence of correlation as it allows for cross sectional heterogeneity by letting the intercept differ across entities.

Table 3: Regression Model 1 Estimates for Fixed Effect (Portfolio Quality Results)

Dependent Variable: PQ				
Method: Panel Least Squares				
Date: 12/03/19 Time: 23:28				
Sample: 2010 2017				
Periods included: 8				
Cross-sections included: 5				
Total panel (unbalanced) observations: 31				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
BMD	44.71061	29.75132	1.502811	0.1465
BMI	4.080825	2.775910	1.470085	0.1551
BMA	-1.83E-05	9.27E-06	-1.973164	0.0606
C	-5.085135	20.78334	-0.244674	0.8089
	Effects Specification			
Cross-section fixed (dummy variables)				
R-squared	0.517427	Mean dependent var		32.23462
Adjusted R-squared	0.370558	S.D. dependent var		27.34506
S.E. of regression	21.69486	Akaike info criterion		9.209664
Sum squared resid	10825.34	Schwarz criterion		9.579726
Log likelihood	-134.7498	Hannan-Quinn criter.		9.330295
F-statistic	3.523033	Durbin-Watson stat		1.995749
Prob(F-statistic)	0.010226			

Source: Authors Computation using Eviews 9 (2019)

The regression model in algebraic/general form is:

$PQ_{it} = \alpha_0 + \alpha_1 BMD_{it} + \alpha_2 BMI_{it} + \alpha_3 BMA_{it} + \mu_{it}$

The specific regression model from the Eviews regression analysis is:

PQ = -5.085135 + 44.71061BMD + 4.080825BMI - 1.83E-05BMA …….. (eq. 1)

Table 3 showed the panel regression results (UEM fixed effect) of effect of Business Model dimensions (business model design, business model innovation, and business model analysis) on portfolio quality (PQ). The adjusted r-squared value showed that 37.05% of variations in portfolio quality were caused by individual specific effects. This indicates that individual bank specific factors causing variations in portfolio quality of the Micro Finance Bank in Oyo State.

The p-value associated with the F-statistic of 0.010226 was less than the critical value of 0.05 leading to the overall F-test rejection of the null hypothesis that none of the independent variables is significant and therefore leading to the conclusion that one of the independent variables is significantly related to the dependent variable (portfolio quality).

Regarding the relationship between the dependent variable (portfolio quality), and the independent variables (BMD, BMI, and BMA), the model showed that portfolio quality is inversely and insignificantly related to business model analysis (BMA) as indicated by the negative coefficients of β_3 = -1.83E-05 implying that improvement in business model analysis does not contribute to an increase in portfolio at risk as a measure of portfolio quality (PQ) of Micro finance banks, but rather have the opposite effect (decrease in portfolio at risk). A study by Nyamsogoro (2010) supports this negative relationship between portfolio at risk and financial sustainability.

The model also indicates that BMD and BMI have direct positive relationship with portfolio quality as indicated by the positive coefficients of β_1 = 44.71061 and β_2 = 4.080825 respectively. The relationship is however not statistically significant. The fixed effect model result showed that business model dimensions had joint significant effect on portfolio quality of ($F_{(3, 26)}$ = 3.523033, p<0.05). Based on the UEM fixed effect model, the hypothesis for the model was rejected. Therefore, the null hypothesis which states that Business Model dimensions have no significant effect on the portfolio quality of Micro Finance Bank in Oyo State, Nigeria is hereby rejected.

Discussion

The effect of business model dimensions on portfolio quality of microfinance banks in Oyo state, Nigeria has been scientifically determined in this study. The analyses results (descriptive and

inferential) were presented in tables 1 – 3. The inferential results revealed that business model dimensions had joint significant effect on portfolio quality. This finding is consistent with Masyhud (2004) which states that the lower the value of NPL or portfolio at risk, the better the quality of bank's assets. Non-Performing Loan and Portfolio at risk demonstrates the ability of bank management in managing the problem of financing provided by the bank. Therefore, the higher this ratio the worse the Portfolio quality of banks that caused the greater number of problem loans, the likelihood of a bank in the greater problematic conditions.

From theoretical perspective, the result of this study supports the proposition of the RBV as value creation emanates from within the firm. This aligns with the variations observed across the MFBs considered for the study. Empirical support for this finding exists in the study of Killen, Hunt, and Kleinschmidt (2008) on the link between product innovation and portfolio management among a section of organizations in Australia.

4. CONCLUSION AND RECOMMENDATION

The study concluded that business model dimensions have significant effect on portfolio quality of MFBs in Oyo state, Nigeria. The implication is that, business model enhances portfolio quality of MFBs in Oyo state, Nigeria. Therefore, the study recommends that the management of MFBs should initiate policies, program and procedures aimed at enhancing appropriate model alignment, innovation and analysis so as to improve performance through quality portfolio. Furthermore, the government needs to initiate policies aimed at promoting research aimed at aligning MFBs business model with their operating environment so as to guaranty long term sustainability of the financial system.

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Appendices

1. Names of the MFBs used for the research

Name	MFB	Street Address	Date Licensed
Apex Trust Microfinance Bank Limited	MFB	FMBN Building, 1, Adekunle Fajuyi Road, Dugbe	4/21/2010
Polybadan Microfinance Bank Limited	MFB	The Polytechnic, Ibadan Ventures, Ibadan	4/21/2007
Unibadan MIcrofinance Bank Limited	MFB	1, Elkanemi Road, University of Ibadan, Ibadan Oyo State, Nigeria	7/28/2008
Oja Tesan Egbeda Microfinance Bank Limited	MFB	2, Station Market Road, Erunmu Egbeda Local Govt A	1/2/2008
Kadupe Microfinance Bank Limited	MFB		2008