

OPERATIONAL RISK AND FINANCIAL PERFORMANCE OF MICROFINANCE BANKS IN KENYA

Daniel Mwasa Ishmail.

Doctoral candidate, School of Business and Entrepreneurship, Jomo-Kenyatta University of Agriculture and Technology, Kenya.

Florence Memba.

Ph.D., Lecturer, School of Business and Entrepreneurship, Jomo-Kenyatta University of Agriculture and Technology (JKUAT), Kenya.

Jane Muriithi.

Ph.D., Lecturer, School of Business and Economics, African International University, Kenya.

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ABSTRACT

The aim of the study was to explore the effect of operational risk on financial performance of Microfinance banks in Kenya. The target population was MFBs regulated by Central Bank of Kenya (CBK). The study employed census method. Secondary data for thirteen (13) MFBs was collected from published annual reports for the period 2011-2019. The study employed explanatory research design. Unbalanced panel regression model was employed to examine the impact of independent variables on dependent variable using unbalanced panel data. The dependent variable, financial performance was measured by Return on Equity (ROE). The indicators of operational risk were Management Expense Ratio, Operational Expense Ratio, Ratio of Overheads to Total Earning and Cost Income Ratio. The finding established that operational risk had significant and strong negative relationship financial performance of

microfinance banks measured gauged with ROA. Similarly, the results revealed an insignificant weak relationship between operational risk and ROE. The model F statistics indicated operational risk had negative and significant influence ROA of Microfinance Banks in Kenya at 5% level of significance. In conclusion, the negative and significant relationship between operational risk and financial performance (ROA) implying that staff cost incurred in managing the organization has adverse effect on the profitability of MFBs. The study recommends MFBs should adopt and upgrade to information and communication technologies and management systems that minimize staff expense and overheads.

Key words: Operational risk; Financial Performance; return on asset; return on equity; Microfinance Bank.

INTRODUCTION

Banks prominent role is financial intermediation through channeling surplus funds from household units and firms to deficit investment units (Mishkin and Eakin 2012). Commercial banks in the process of intermediation, conduct four fundamental services namely: liquidity management, asset management, liability management and capital adequacy management (Kwakwala, 2015). A well-developed financial system is essential for fostering a nation's economic development and growth by facilitating optimal distribution of both financial and non-financial resources to greatest utilization. Provision of financial facilities such as short-term credit, saving and current accounts and insurance products promotes accelerated investments, risk diversification as well promote currency exchanges within a nation. Wide-ranging Financial mechanism that reduces or completely eliminates price and non-price obstacles results to particularly benefiting the poor section of a nation, who in most cases are barred from using financial services (Demirgyc-Kunt & Klapper, 2012).

According to Gadzo, Kportorgbi and Gatsi (2019) operational risk is defined as loss arising from inadequate or flawed internal processes. The operational risk exposure includes legal risk arising from both internal and external fraudulent activities, bank products and procedural practices, system breakdown, failure of physical assets and process management. They further argue that operational risk exposure leads to banks financial performance volatility therefore dire need be addressed to mitigate the adverse effects on Bank's net worth. The Basel Committee on Banking Supervision (BCBS) (2014) recognizes that operational risk arises from the following operational loss events; Employment and safety Practices; internal fraud; external fraud; Customer, product and business practices; breakdown of Physical assets; business disruptions and system failure; and execution, delivery and process management. Sharifi, Haldar and Rao (2016) argue that bank size is inversely related to excess capital preserved for mitigating operational risk. The implication of this inverse association between size and operational risk is that smaller banks maintain higher excess capital beyond the minimum stipulated as per Basel guidelines.

Maniagi (2018) notes that, financial institution operates in volatile and unpredictable environment. Encountering multi excessive faced risks that include credit risk, operational risk, liquidity risk and market risk among other business risks. With stiff competition and emerging new market opportunities, banks have adopted expansion, strategies and sophisticated lending techniques to micro, small and medium enterprise and low-income level population which has in turn lead high non-performing loans hence high level of credit risk. Similarly, severe competition from the fintech and internet banking has mounted more pressure to banking sector. Financial institutions (banks) venture in risky investment with the aim of improving their earnings to satisfy their investors.

Empirical studies between operational risk and financial performance have mostly focused on commercial banks and insurance companies, these studies include Gadzo, Kportorgbi and Gatsi (2019); Onsongo, Mwangi and Muathe (2019); Al-Yatama et al (2020); and Fadun and Oye (2020). There exist limited studies on the relationship between operational risk and financial performance of microfinance sector, thus the study aims to determine the factual analytical effect of operational risk on financial performance of microfinance banks in Kenya.

RESEARCH OBJECTIVES

To examine the effect of operational risk on the financial performance of Microfinance banks in Kenya.

Theoretical Framework

The study research concept is premised on stakeholder theory, that was postulated by Freeman, (1999). Freeman (1999) suggest that it is the board of directors obligation to consider the interests of not only the firm's shareholders but also take into account the needs of all firms' interested parties more so those linked firms' impact on the environment and the societal wellbeing. Heenetigala (2011) claimed that the moral standpoint of the theory is that firms' stakeholders are entitled with a privilege to have their needs considered appropriately by the corporation and the professional managers should run the enterprise for the profit of all interested parties, irrespective to whether the

party contributes to improved profitability of the company. Madison (2014) argued that superior firm's financial performance is the envisioned outcome of a stakeholder theory assumption. The theory implies that results accrue from both the shareholders and professional manager from contractual relationship such as employment contracts, act as stewards. Therefore, if parties opt to act as stewards and pursues firms' objective, the theory assume that positive effect on firm's performance since all parties are working in harmony.

LITERATURE REVIEW

Gadzo, Kportorgbi and Gatsi (2019) examined the impact of credit risk and operational risk on financial performance of universal banks in Ghana adopting partial least squared structural equation model (PLS SEM) approach. Financial performance was assessed through NIM and ROAE while operational risk was measured by Bank Leverage (BL) and Portfolio Concentration (PC). The results showed that BL and portfolio concentration had a statistically negative relationship with financial performance. The study concluded that as operational risk exposure increases results to significant profit reduction.

Using explanatory research design, Onsongo, Mwangi and Muathe (2019) conducted research on firm size, operational risk and financial performance of commercial and service companies listed in Nairobi Securities exchange over the period between 2013 to 2017. Using panel regression to analyze secondary data obtained from published annual reports, the study found that operational risk had positive insignificant impact on financial performance with the Cost to Income ratio and ROA as proxy respectively. The results further revealed that firm size as a moderator had significant influence on the relation between operational risk and financial performance. The implication of the study is that operational risk does not impact financial performance of commercial and service businesses.

In Kuwait, Al-Yatama et al (2020) investigated the effects of credit risk, operational risk and liquidity risk on the financial performance of insurance companies listed at Kuwait Stock Exchange over the period 2009-2017. The following proxies were utilized; total debt to total asset ratio for Credit risk; total expenses to total revenue for operational risk; current liabilities to current assets for liquidity risk; ROA and ROE for financial performance. The study found as follows; credit risk had negative and statistically significant relation with the performance of Kuwait insurance companies; Liquidity had mixed results, negative insignificant effect on ROA while having positive insignificant impact on ROE; and operational risk was found to have negative insignificant relationship with financial performance. The finding suggests that operational risk to have negative but insignificant influence on financial performance.

Using structural equation modeling, Chen et al., (2009) investigated the influence of capital structure and operational risk on profitability of life insurance industry in Taiwan for the period between 1993-2003, a sample of 13 insurance companies was used. Secondary data was collected for empirical analysis. Portfolio concentration and insurance leverage were utilized as proxies to gauge operation risks while Profit margin and ROA were employed to measure profitability. The results revealed that operation risk had negative and significant influence on profitability of

insurance companies. The study further revealed that capital structure exerts negative and significant influence on profitability.

The influence of operational risk on bank performance was examined by Olalere, Islam and Sallha. (2018) utilizing a 16 commercial banks in Nigeria over the period between 2009 to 2015. They employed panel data analysis on secondary data collected from annual reports of banks. The net interest margin was utilized to gauge financial performance, while the operational risk was proxied by the cost to income ratio, and total operating expenses to total assets ratio. The finding of the revealed that that the cost to income ratio exerted negative significant impact on banks performance. The study further found that the ratio of operating expenses positive and statistically significant effect on banks performance while firm size had insignificant influence. Al-Tamimi, Minaoui and Elkelish. (2015) investigated how bank risks influenced the performance of Islamic banks in the Gulf countries. The study period was from 2000 to 2012. They found that operation risk exerted a negative and significant influence on financial performance. The study concluded that there existed a relationship between operational risk and financial performance.

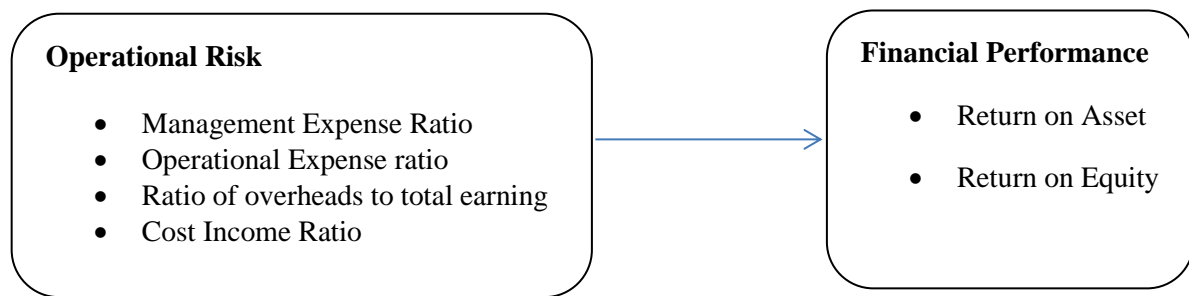
Using longitudinal research design, Fadun and Oye (2020) investigated the impacts of operational risk management practices on financial performance of commercial banks in Nigeria over a period of 10 years (2008 -2017). The study utilized secondary data extracted from financial statements of banks and analyzed the data through linear multiple regression. Cost to Income ratio (CIR) was employed as proxy to operational risk management while ROA as measure of financial performance. The study established that operational risk had negative significant relationship with financial performance. The study further found that Credit risk measured by NPLR had negative and statistically significant association with bank financial performance while proxies of liquidity risk (Liquidity ratio and Loan to Deposit ratio) had a positive and significant relationship with ROA. The study concluded that banks performance was influenced by financial risks (credit risk, liquidity risk , market risk and Operational risk)

A study on the effect of corporate governance on financial performance in North Central Nigeria MFBs, using the Pearson correlation, established existence of significant relationship between earning per share (EPS) and corporate governance practices (Gadi, 2015). Additionally, the study established there existed no significant relationship between corporate governance and bank's financial performance (ROA & ROE). The study utilized secondary data gathered from annual reports of the 23 MFBs out of the total 158 MFBs.

Conceptual Framework

The conceptual framework consisted of independent variable, operational risk is measured by Management Expense ratio, Operational Expense Ratio, Ratio of Overheads to total earning and Cost Income Ratio while dependent variable was measured by Return on Asset and Return on

equity)



Independent Variable

Dependent Variable

Figure 1 Conceptual Framework

STUDY METHODOLOGY

The study employed combination of explanatory research design and quantitative research design. Panel data regression was used to determine the extent to which operational risk affects financial performance of MFBs in Kenya for the periods 2011-2019. Further, the study examined the moderating effect of firm size on financial performance. Panel data will be considered as appropriate since it measures and demonstrates effects that hardly detectable through use of cross-sectional data or time series data. (Pascal,2012; Gujarati & Porter, 2010). The target population was the thirteen (13) MFBs licensed and regulated by Central Bank of Kenya (CBK) as at December 2019. The study adopted Census method. The census approach enhance validity on data collected by minimizing errors associated with sampling techniques (Saunders, Lewis & Thornhill, 2009). The study was based on secondary data collected from audited annual financial statements of MFBs between years 2011 and 2019.

Model Specification

7.1 Empirical Model

$$ROA_{it} = \beta_0 + \beta_1 MER_{it} + \beta_2 OER_{it} + \beta_3 OTE_{it} + \beta_4 CIR_{it} + \mu_{it} + \varepsilon_{it} \dots(7.1)$$

$$ROE_{it} = \beta_0 + \beta_1 MER_{it} + \beta_2 OER_{it} + \beta_3 OTE_{it} + \beta_4 CIR_{it} + \mu_{it} + \varepsilon_{it} \dots(7.2)$$

Where;

ROA_{it} is Return on Asset for MFB i at time t

ROE_{it} is Return on Equity for MFB i at time t

β_0 is the constant or intercept

β_i ; ($i = 1,2,3, 4$) is coefficient of regression

MER_{it} is independent variable, Management Expense Ratio of MFB i at time t

OER_{it} is independent variable, Operational Expense Ratio for MFB i at time t

OTE_{it} is independent variable, Ratio of Overheads to Total Earning Ratio of MFB i at time t

CIR_{it} is independent variable, Cost Income Ratio for MFB i at time t

μ_{it} is the individual level effect.

ε_{it} is the idiosyncratic error

Empirical Results and Discussion

Descriptive statistics were used to summarize data and to identify patterns. Though descriptive statistics doesn't allow coming up with conclusion, the nature of data was presented in terms of their mean, maximum and minimum, standard deviation, Jacque-Bera (JB) statistic in Table 1.

Variable	min	max	Mean	St.Dev	JB	P-value(JB)
Operational Risk (OR)	23.301	620.54	79.399	87.41	1.761	0.563
MER	6.408	66.071	20.263	11.8	1.382	0.501
OER	9.456	627.273	49.714	74.647	1.004	0.605
OTE	31.076	766.667	102.53	106.409	1.501	0.474
CIR	35.185	1433.333	145.09	178.741	2.501	0.274
Dependent variable						
Financial Performance	-764.338	165.748	-19.106	86.794	1.233	0.834
ROA	-54.217	3.804	-6.898	-54.217	1.563	0.915
ROE	-1487.5	355.556	-31.314	-1487.5	0.968	0.678

Source: Study Data (2023)

The outcome in table 1 shows the mean value of financial performance of microfinance banks for the years 2011-2019 was negative 19.106% depicting that the overall sector of microfinance was incurring losses. The results showed that the return on equity as key measure of financial performance, having minimum value of -1487.5% and maximum value of 355.556% with a mean value of -31.314%. The results depict on average that banks earned -31.314% return on equity with standard deviation of -1487.5% indicating that banks were not utilizing owner's equity appropriately, likewise the mean value of Return to Asset was -6.898%, implying that that MFBs asset were not utilized optimally. As indicated in the table above the overall operational risk mean for the microfinance banks was 79.399 %. As depicted from the table 1, the mean value of Management Expense Ratio (MER), Operational Expense Ratio (OER), Ratio of Overheads to Total Earning (OTE) and Cost to Income Ratio (CIR) was 20.263 ± 11.8, 49.714±74.647, 102.53±106.409 and 145.09± 178.741 respectively.

Correlation Matrix

Table 2: Correlation Matrix of ROA and Operational risk components.

Variables	(1)	(2)	(3)	(4)	(5)
(1) ROA	1.000				
(2) MER	-0.848***	1.000			
(3) OER	-0.658***	0.627***	1.000		
(4) OTE	-0.766***	0.729***	0.753***	1.000	
(5) CIR	-0.750***	0.727***	0.725***	0.594***	1.000

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Source: Study Data (2023)

The results in table 2 established that all indicators of operational risk and Return on Assets (ROA) have a negative and significant correlation with the financial performance of Microfinance Banks in Kenya. The Management Expense Ratio (MER) has a strong negative relationship with ROA with a correlation coat 1% level of significance.

Table 3: Correlation Matrix of Credit risk components, Firm Size and ROE.

Variables	(1)	(2)	(3)	(4)	(5)
(1) ROE	1.000				
(2) MER	-0.135	1.000			
(3) OER	-0.009	0.627***	1.000		
(4) OTE	-0.080	0.729***	0.753***	1.000	
(5) CIR	-0.054	0.727***	0.725***	0.594***	1.000

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Source: Study Data (2023)

The results in table 3 depicts that MER, OER, OTE and CIR had a weak negative and insignificant influence on the ROE. The correlation coefficient of MER, OER, OTE and CIR was -0.135, -0.009, -0.080 and -0.054 respectively.

Table 4: Correlation Matrix of Operational risk and ROA

Variables	(1)	(2)
(1) ROA	1.000	
(2) OR	-0.785***	1.000

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Source: Study Data (2023)

From the outcome of table 4, indicate that the independent variable, operational risk has a significant strong negative correlation with the Return to Asset (ROA) with a correlation coefficient value of -0.884.

Table 5: Correlation Matrix of Operational risk and ROE

Variables	(1)	(2)
(1) ROE	1.000	
(2) OR	-0.058	1.000

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Source: Study Data (2023)

Table 5 results portray that operational risk has insignificant and weak negative relationship with financial performance of Microfinance Banks in Kenya gauge by ROE, with a correlation coefficient value of -0.058.

Model Determination and Regression analysis.

Test of Normality

Table 6: Kolmogorov-Smirnov goodness of fit test, Shapiro-Wilk test, Jacque-Bera (JB)

Variable	KS	P (KS)	SW	P(SW)	JB	P-value(JB)
Operational Risk (OR)	.058	.200 ^e	.992	.876	1.761	0.563
Dependent variable						
ROA	.088	.071 ^e	.956	.187	1.563	0.915
ROE	.048	.200 ^e	.977	.101	0.968	0.678

Source: Study Data (2023)

The test results in table 6 indicate that the p-values were greater than 5% of all three methods employed and therefore signifying that the data followed a normal distribution.

Serial Correlation Test

Table 7: Wooldridge test for autocorrelation in panel data

Wooldridge test for autocorrelation in panel data

H0: no first-order autocorrelation

Test	F	Prob > F	Conclusion
Wooldridge test for autocorrelation	2.638	0.1142	Autocorrelation not present

Source: Study Data (2023)

The results presented in table 7 above indicated that serial correlation was not violated, since the Wooldridge test was insignificant at 0.05.

Test for Heteroscedasticity

Breusch-Pagan test and Levene test were used to carry out heteroscedasticity test of the study variable.

Table 9: Breusch-Pagan test and Levene Test

Variable	Breusch-Pagan test		Levene test	
	Chi-square	Prob > Chi2	Statistic	Pr > F
OR	0.009	.926	1.443	0.191
ROA	2.364	.122	1.709	0.1484
ROE	1.170	.568	1.119	0.3412

Source: Study Data (2023)

The results of the Breusch-Pagan test and Levene test in table 9 indicate there was no evidence of Heteroscedasticity in the variables data since the Breusch-Pagan statistics and Levene statistics for all attributes of the study variables were higher than the threshold (p>0.05)

Unit Root Testing

Table 10: Unit root test

Assumptions:

Unit root test

Variables	At levels			first difference			Order of integration
	Tstat	prob	remarks	Tstat	prob	remarks	
ROA	-2.116	0.088	Non stationary	-3.997	0.0001	stationary	I(1)
ROE	-2.087	0.091	Non stationary	-3.523	0.0006	stationary	I(1)
OP	-2.341	0.092	Non stationary	-3.7	0.0003	stationary	I(1)

Source: Study Data (2023)

The test results in table 10 indicate that the Augmented Dickey-Fuller (ADF) test showed that all variables have unit roots, therefore were Non- stationary At levels and became stationary after first

differencing. The finding implies that the alternative hypothesis be rejected and variables were used in their first difference

Hausman Specification Test.

Hausman test for specification was conducted to determine whether to use the random effects model or the fixed effect model. Hausman tests the null hypothesis that the preferred model is random effects versus the alternative to the fixed effects. The test rejects the null when the p-value is less than 0.05.

Table 11: Hausman specification test

Hausman (1978) specification test (model)	Chi-square test value	P-value	Comment
ROA	11.234	0.0008	Fixed effect model
ROE	7.349	0.0067	Fixed effect model

Source: Study Data (2023)

Table 11 shows that Hausman specification test favors Fixed effect model for ROA and ROE model which have chi-square test value of 11.234 and 7.349 respectively with $P < 0.05$, at 5% level of significance the diagnostic tables and the conclusion are all based on the fixed effect panel regression model.

Fixed effect panel regression estimates of Operational Risk on ROA.

Table 12: Fixed effect panel regression estimates of Operational risk components on ROA.

ROA	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
MER	-0.590	0.086	-6.83	0.000	-0.762	-0.418	***
OER	-0.013	0.011	-1.27	0.209	-0.034	0.008	
O _{TE}	0.000	0.015	0.02	0.983	-0.030	0.030	
CIR	-0.004	0.008	-0.45	0.652	-0.021	0.013	
Constant	6.238	1.608	3.88	0.000	3.037	9.440	***
Mean dependent var		-6.898				SD dependent var	12.034
R-squared		0.539				Number of obs	94.000
F-test		22.477				Prob > F	0.000
Akaike crit. (AIC)		538.819				Bayesian crit. (BIC)	551.535

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Source: Study Data (2023)

The coefficient results in table 12 demonstrate that the Management Expense Ratio (MER) significantly predicted ROA of Microfinance banks in Kenya at 1% level of significance. The coefficient of MER was found to be $\beta = -0.590$. The coefficient was statistically significant with the t-statistic and p-values of -6.83 and 0.00 respectively. The negative effect shows that there is negative relationship between MER and ROA. This value $\beta = -0.590$ shows that holding other variables in the model constant, one unit increase of MER would lead to 0.590 decrease of ROA. Therefore, MFBs strive to reduce their operating expense relative to total assets to post better financial performance.

From the regression results in Table 12 the coefficient of other operational risk indicators was found to be OER -0.013 and CIR -0.004 . These values show that holding other variables in the model, an increase of operational risk gauged by OER and CIR by one unit leads to a decrease of financial performance (ROA) by -0.013 and -0.004 respectively. The negative effect shows that there is an inverse relationship between the proxies of operational risk and financial performance of MFBs in

Kenya. The t-statistic values were -1.27 and -0.45 respectively. The p-values were found to be 0.209 and 0.652. The coefficients of OER and CIR were found to have negative and statistically insignificant relationship with ROA. These results are inconsistent with King’ori, Kioko and Shikumo (2017) that observed that operational efficiency had positive and significant influence on ROA of MFBs.

The fixed effect panel regression estimates reported in table12 shows that model R-squared is 53.9 per cent, this implies that 53.9 per cent variability of ROA is as a result of operational risk while the remaining percentage 46.1 per cent of variation in ROA is explained by other factors not include in the model, holding all other factor constant. The model F statistic indicated a strong statistical significance at 5% level of significance (F-statistic =22.477, P<0.05). This implies that the operational risk affects the financial performance (ROA) of microfinance banks (MFBs) in Kenya. Therefore, the null hypothesis that operational risk has no significant effect on financial performance (ROA) of MFBs in Kenya is rejected.

Fixed effect panel regression estimates of Operational Risk components on ROE.

Table 13: Fixed effect panel regression estimates of Operational risk components on ROE

ROE	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
MER	-5.421	3.024	-1.79	0.077	-11.441	0.600	*
OER	0.346	0.368	0.94	0.350	-0.387	1.078	
OTE	-0.173	0.529	-0.33	0.744	-1.228	0.881	
CIR	0.103	0.297	0.35	0.730	-0.489	0.695	
Constant	64.167	56.252	1.14	0.258	-47.845	176.178	
Mean dependent var		-31.314	SD dependent var		169.013		
R-squared		0.045	Number of obs		94.000		
F-test		0.897	Prob > F		0.575		
Akaike crit. (AIC)		1207.173	Bayesian crit. (BIC)		1219.890		

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

From table 13, the coefficient results from fixed effect panel regression reveal MER had a negative effect with ROE. The coefficient of MER was -5.421 with a t-statistic and p- value of -1.79 and 0.077 respectively. These results suggest that MER negatively and significant influenced the ROE of MFBs in Kenya at 10 per cent level of significance. The coefficient value demonstrates that holding other indicators of operational risk in the model constant, an increase of the Operational risks (MER) by one-unit cause ROE to decrease by 5.421.

Further, the results reported in table 4.13 illustrate that OER and CIR had a positive and statistically insignificant impact on financial performance (ROE) of MFBs. The coefficient of OER and CIR was $\beta=0.103$ and $\beta= 0.346$ respectively. The t-statistic values were 0.94 and 0.35 respectively. While the p-values were found to be 0.350 and 0.730. The interpretation was that the variation between operation risk proxies (OER and CIR) and ROE of MFBs was statistically insignificant. In addition, table 13 depict that the coefficient of OTE was found to be -0.173 with a corresponding p-value of 0.744. Therefore, it was concluded that OTE had insignificant negative relationship with MFBs ROE.

The fixed effect panel regression estimates provided in table 13 shows the good of-fit statistic value of R-squared of 0.045, this demonstrates that operational risk components included in the model are able to explain about 4.5 per cent of the variation in ROE while the remaining percentage of

variation in ROE may be as a result of variables not included in the model. The model F statistic of 0.897 with a p-value of 0.575 was found to be statistically insignificant at a 5% level of significance. This means that the joint effect of the operational risk components does not statistically significantly predict the financial performance (ROE) of microfinance banks (MFBs) in Kenya, therefore the null hypothesis was not rejected that the operation risk has no significant effect on financial performance of microfinance banks in Kenya.

CONCLUSION AND RECOMMENDATIONS

The study found that there exists a relationship between operational risk and financial performance. The regression results reveal that operational risk has a statistically significant and inverse relationship with microfinance banks' financial performance measured by return on asset. This implies that reduction in operational cost will lead to improved financial performance of microfinance banks.

The study recommends that MFBs manage their operational risk through adopting effective and efficient information technology communication systems that will scale down the cost of operations and wages. Further, microfinance banks should invest in fintech and digital credit systems to reduce the staff cost incurred for outreach.

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