THE IMPACT OF CREDIT RISK ON CORPORATE PERFOMANCE IN ZIMBABWE's MICROFINANCE SECTOR: A CASE STUDY OF TAROTH FINANCE (PRIVATE) LIMITED

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ABSTRACT

Microfinance institutions hold the key to economic growth, especially in developing countries such as Zimbabwe. In fact, for a developing country like Zimbabwe, whose economy is not yet performing well; the microfinance sector is actually a strategic industry that must be safeguarded, because its failure is bound to have long-lasting negative knock-on effects on the already "bed-ridden" economy. Since independence, Zimbabwe's microfinance sector has generally experienced a decline in corporate performance and at the same period microfinance closures continued to increase drastically. Therefore, the study sought to determine the impact of credit risk on corporate performance on Zimbabwe's microfinance sector using time series data. Taroth Finance (Pvt) Ltd was used as a case study. The research paper also sought to determine the impact of interest rates, inflation and the number of branches on corporate performance. The Ordinary Least Squares (OLS) approach was employed to estimate the impact of credit risk on corporate performance. The researchers used data from Taroth Finance and ZimStats. The study found out that credit risk has a negative effect on corporate performance of Taroth Finance. The research ends with recommendations to Taroth Finance and government policy makers on how to put in place policies that minimise credit risk in the microfinance sector of Zimbabwe.

Keywords: - *Credit risk, Corporate performance, Microfinance*

1.0 INTRODUCTION

The microfinance sector of every country plays a pivotal role in its economy's growth and development. Associated with such a role, is credit risk; which is the most significant risk faced by microfinance institutions (Akomeah et al., 2020). According to Hasan et al. (2014) credit risk is one of the major causes of failures of microfinance companies as well as the global financial. This research intends to find the impact of credit risk on corporate performance in the

microfinance sector of Zimbabwe under the prevailing economic challenges from the period 2006 – 2013, based on Taroth Finance (Pvt) Ltd as a case study. Under the period of study the microfinance sector has been recording the highest rate of credit risk. This study will also consider other factors that could possibly impact corporate performance in positive or negative way.

1.1 Statement of the Problem

The Zimbabwe Association of Microfinance Institutions (2010), ranked Taroth Finance (Pvt) Ltd among the lowly performing Microfinance Company in Zimbabwe. The Company's profit margin has shown volatility over the past eight years, yet it has the highest record of loan disbursements to its major clients (civil servants) as compared to the major players in microfinance sector for example First Microfinance (FMC) (Pvt) Ltd and Yonder Rift (Pvt) Ltd (ZAMFI, 2012). The company injected huge capital and established many branches all over Zimbabwe. However it has been experiencing an outstanding decline in profits for the past decade. This trend not only threatens the viability and sustainability of Taroth Finance but also hinders the achievement of the goals for which it intended to provide credit to the rural unbanked population and bridge the financing gap in the mainstream financial sector. Therefore, the principal motivation behind this study is to find out the impact of credit risk on corporate performance of Taroth Finance.

1.2 Relevance and Timeliness of the Research

This research intends to benefit the company and other players engaged in the lending business to implement good credit risk management systems and practise good lending practices. This therefore, adds value to the organisations per se and shareholder value maximisation through hedging against and minimising credit risk. The study will attempt to find solutions to minimise credit risk and maximise business profit. It is necessary for the company to hedge against credit risk in the face of current economic crisis, otherwise it will face severe bad debt losses, and cash flow constrains and goes under as has been trend in the period of study. The results from this study will not only help the company but some other sectors involved in credit granting like the credit stores in Zimbabwe. Credit risk management is a grey area in Taroth Finance and this study will attempt to fill this informational gap.

2.0 LITERATURE REVIEW

2.1 Theoretical Literature Review

2.1.0 Credit and credit risk

This section gives the definitions of credit and credit risk as far as they pertain to credit granting activities. These issues go hand in hand, since the existence of credit risk emanates from credit. Credit offers people and organizations a chance to budget and effectively manage their finances since it can be paid over a period of time. The origins of credit goes back to Roman times, where money-lenders would set up a bench in a forum and ply for trade and the term credit would mean he/she believes (Dunbar, 2000), until it was appreciated after the Second World War II in 1945 in Europe (Kiiru, 2004). Credit is amount of money that will be paid at some future date, in return for benefits received earlier, such as goods purchased or loans obtained Cole (1998). Credit helps meeting emergency expenses such as death and sickness is a burden to consumers and credit facilities help in spreading the expenses over a long period (Bluhm, 2002)

Micro-credit is the most important part of the micro-finance field, which can comprise all other financial products such as micro-insurance and savings. Micro finance is an economic development approach that refers to the provision of financial services (i.e. micro loans/credit) to low-income clients, including the self-employed who do not qualify for or do not have access to traditional bank loans. Micro-credit is any loan falling within the category of a money-lending transaction (Swart, 2003). In developing countries especially, micro-credit enables very poor people to engage in self-employment projects that generate income. A micro-lender is a corporation, company, cooperative, trust, mutual bank or bank which, as part of its business advances micro loans. It is a business where you can borrow small amounts of money over a payback period specified by the borrower (Swart, 2003).

Despite the merits of credit highlighted above, credit can be risky if not managed prudently and can lead to business losses through default. Many credit problems reveal basic weaknesses in the credit granting and monitoring processes (Bluhm, 2000). Banks and other financial institutions need to manage the credit risk inherent in the entire portfolio as well as the risk in individual credits or transactions (Lowenstein, 2000). In agreement, Brownbridge (1998) cited that adverse selection of bank borrowers has the major cause of bad loans with many banks pursuing imprudent lending strategies, in some cases involving insider lending and higher concentrations.

On the other hand, credit risk exists because an expected payment might not occur. Credit risk can be defined as potential losses from the refusal or inability of credit customers to pay what is owed in full and on time, (Coyle, 2000). The RBZ Guideline (2006) defines credit risk as current and prospective risk to earnings or capital arising from an obligator's failure to meet terms of any contract with a bank or otherwise fails to perform as agreed. The increasing variety in the types of counter parties (from individuals to sovereign governments) and the ever-expanding variety in the forms of obligations (from auto loans to complex derivatives transactions) has meant that credit risk management has jumped to the forefront of risk management activities carried out by firms in the financial services industry, (Fatemi and Fooladi, 2006).

Cole (1998) further noted that the credit manager or loan officer will not grant everyone credit because of the potential losses. These will come as a risk that emanates from failure of the debtor to repay. Baumback and Lawyer (1998) were in agreement to the fact that credit has its own attendant risk(s), that there is a trade-off between risk and return and that credit reduces an individual's inconvenience due to cash shortage. By so doing the lender loses the value of the funds originally given to the debtor, time and costs expended attempting to collect payment, so it is essential to assess the amount of risk a particular debtor represents. (Gamsberg and Macmillan, 2002) agreed maintained that lending involves risk and most potential lenders would like to minimize the risks that attend the business of lending, namely, the risk of default and the risk that the market value of the asset held by the lender will fall.

The second component comes in the form of time. Payments are spread over a period of time and the lender might lose opportunities due to illiquidity. If cash were received early, the lender would have benefited from the investment earnings like interest. In some cases, he might end up borrowing to meet running costs. The issue of collateral security also comes in. These acts as a fallback position in the event that a borrower fails to meet his/her repayment in time. It usually comes in the form of physical assets, which are sold to recoup the unpaid debts. The issue of operating expenses comes in the form of processing costs, printed forms, and technology like computers, legal fees and other collection expenses. The MFI like any other business has

expenses to meet usually on a monthly basis. In order to pay them, cash has to be readily available from debtors; otherwise the company incurs late payment penalties.
Legal considerations have to be taken into account when granting credit. The Money Lending and Rates of Interest Act - Chapter 14.14 and SI 126 of 1993 that require them to charge a certain percentage in terms of interest rate, govern MFIs. Most MFIs flout the in duplum rule in this particular industry. These laws are promulgated by State to protect both the lender and debtor and should be understood by both parties to avoid penalties and extra costs involved in litigation. Loan officers have to be trained as well and changes have to be noted to adjust credit policies and procedures accordingly. Inflation needs also to be taken seriously when granting credit. As prices go up, the real value of each dollar deteriorates, so credit managers have to take note of the time value for money. A finance charge forms the purpose and essence of any credit granting business. It is an additional amount that must be paid over and above the value received by the borrower. It is the interest income that pays costs that are incurred in a business. These costs come in the form of losses due to non-payment, operating expenses, lost investment earnings, inflation and legal expenses. If not specifically identified, they must nevertheless be incorporated in the price of the service.

2.1.2 Credit risk analysis

Credit risk analysis is a term used to assess the credit qualities of counter-party in order to establish credit worthiness. It is also used to include statistical credit scoring techniques, (Duffie and Singleton, 2003). Credit analysis is a structured process of investigation and assessment of the creditworthiness of a customer (Coyle, 2000).
Credit risk analysis is an important part of the risk management process. Its primary objective is to establish potential and current customer credit worthiness and anticipate sources of risk through assessments, (Lehman, 2003). It is important for risk managers to make decisions about those customers such as reducing credit facilities or rejecting those applicants with high risk (The Basel Committee, 1998).
The techniques used by risk managers in credit analysis are initial screening, credit investigations, the six C's of credit analysis, credit scoring, Altman's Z Score method, financial statement ratio analysis, CAMPARI model for banks and finally industry and macroeconomic environmental analysis. These techniques are better explained by taking into account that credit analysis involves the processes of establishing credit limits for new and existing customers. Credit limits are amounts set by risk managers for each customer such that the customer gets funds on credit not exceeding the allocated amount. Also it should be noted that credit analysis involves quantifying potential risk associated with customer transactions. This is important for risk managers to make decisions about those customers such as reducing credit facilities or rejecting those with high risk.
McNeil (2000) contend that risk managers use various means and techniques to aid in assessing credit worthiness of customers. The following are the techniques used in order to hedge against risk:

2.1.3 Initial screening

This is the first step in assessing the potential applicant's creditworthiness. The credit scoring system is used in conjunction with this stage as a preliminary screening device and turn down applicants who do not attain some minimum score. Credit scoring systems are statistically based systems that assign points to characteristics reported on the application and on the credit bureau report, (Cole, 1998). This method saves time and costs by concentrating on the assessment on

those clients who are creditworthy. This method, however, sometimes denies a company potential business especially where the basic criteria are based on personal details rather than income details, (Creditworthy Co, 2003).

2.1.4 Altman Z score Method

This method was developed by Altman (1968) and it is a statistical ratio model used to predict business failure whereupon a credit applicant customer is rejected if his/her business is likely to fail, (CPA Journal of Finance, 1968). If a Z score lies between 1.8 and 2.7, the firm or an individual is likely to be bankrupt within two years and therefore forms a basis for rejection. This method is an aid in credit risk management. Risk managers use it to determine the chances of bankruptness of a firm in a harsh economic environment and to consider granting credit to individuals employed by stable companies and rejecting those from companies that are likely to go under. This is important for credit risk management.

This method's strength is that it is a heuristic approach, which is easy to apply. But however, this method cannot be universally applied since the standards given might not apply in other circumstances or clients.

2.1.5 Credit Investigations

Credit investigations can be done using forms like direct enquiries such as personal interviews, use of telephones, credit bureaus, credit agencies and outsourcing investigation services from other organizations, (Wilson, 1999). They involve a series of steps undertaken to verify information provided in an application for credit and to determine how the applicant has handled past financial obligations as an aid in making sound credit decision. What should be investigated is the 6C's of credit analysis (Cole, 1998). The 6C's of credit analysis is premised on characteristics such as character, capacity to repay the obligation, capital in terms of net worthiness, collateral, conditions and credit history in order to determine the applicant's creditworthiness. The investigations should eventually help credit managers to gather sufficient and pertinent information as to either accept or reject a credit application.

Cole (1998) said that credit investigations need to be thorough enough and there is no need for generalizations to diminish the inherent risk especially in poor macroeconomic environments like Zimbabwe. He further said that even though there is the right of repossession, the repossessions could be costly and even disastrous if they occur frequently. So credit managers should rely on the quality of the risk as revealed by the credit investigation rather than on other contingent factors.

2.1.6 Financial Statement Ratio Analysis

Financial statements can be prepared using different policies, procedures, methods and standards, so it is necessary to consider qualitative factors when making a credit decision. Financial statements reveal the financial strength and capacity of the organization (Frankwood, 1999). They help credit risk managers is assessing and analyzing new clients through determining their financial healthiness. Those not financially healthy are not granted credit and vice versa for unhealthy ones. Risk managers can use ratio analysis to determine the chances of the survival of a firm in a harsh macroeconomic environment (Frankwood, 1999). In harsh environments, it is recommended that risk managers should continuously search for information revealing current performance of companies that employ most of their clients (Kit, 1996). Risk managers should

revise credit terms for those individuals working for companies that show signs of instability and are likely to close down.

The analysis of these firms could be done using profitability, liquidity and solvency ratios. Profitability ratios are commonly used to measure how effective a firm is in generating profits. Liquidity ratios are used to measure how cash free a firm is and how it can be able to meet its short-term commitments. Frankwood (1999) reports that solvency ratios are used to measure how a firm can be able to meet its long-term commitments.

2.1.7 CAMPARI Model for Banks

This model is based on the canons or rules of good lending which are used by banks or any credit risk operation such as the micro-finance institution. Coyle (2000) said CAMPARI are the principles of good lending for banks that can be reduced to a simplified framework, summarized in a useful mnemonic. CAMPARI stands for Character, Ability, Margin, Purpose, Amount, Repayment and Insurance.

Character of a borrower is scrutinized through various searches of credit references in order to obtain an overview of the applicant's financial performance. Ability refers to the ability to repay the loan when it is due (Cole, 1998). The analysis of the applicant's income in relation to his/her other financial commitments elsewhere can guide the ability to repay the new loan. Margin is analysed in relation to the profits that the MFI will enjoy by offering the applicant the loan. Banks are encouraged to go for applicants that will offer higher margins. However, banks should price the loan taking into account higher risks associated with the high margin businesses. Purpose refers to the purpose of the loan. It is necessary that banks establish a match between term of the loan and the life of the asset.

Amount takes into account the size of the loan and is crucial in the credit appraisal process. Further analysis will be necessary for huge loan portfolios than smaller ones. Repayment looks at the source of repaying the loan. Having clear sources would be favourable for credit decision to accept purposes. Insurance refers to security taken as insurance against failure of borrower to repay the loan. Greenspan (2002) suggests that banks should ensure that security values are always higher than loan values in order to cater for inflation. This method is important in a declining economy since it assists in ensuring that debts are well secured and no loan will be offered without satisfying this criterion. Attributes such as insurance are vital to safeguard debt in the event of default, a feature that is common in distressed economies.

2.1.8 Credit risk measurement

As part of credit risk management process, it aims at developing and maintaining systems that assist in credit risk estimation, (Lehman, 2003). The increasing complexity of the world of credit risk has given rise to an equally complex set of models designed to measure and manage this risk. The following is a brief description of the scientific models that work as tools of credit risk management that have been used by risk managers although tailor-made to suit their environments.

2.1.9 KMV's Portfolio Manager

This model uses an option based Merton model approach. It is a software model introduced in 1993 to measure default probabilities (Bluhm, 2003). Empirical distributions of default probabilities are created from KMV's proprietary. It uses return information and Value at risk measurements to optimize a portfolio of credit assets and calculates Sharpe ratios of individual assets. It enables optimal buy/sell/hold levels for trading or origination opportunities to be

determined and optimal portfolios to be calculated by re-arranging the weights of existing positions.
The model also produces mark to model prices for credit assets and indicates levels and marginal risk contributions. Using either analytical approximation or Monte Carlo simulation, the model also calculates the credit portfolio's loss distribution at a given horizon date and indicates the amount of economic capital required to support different levels of risk, (Lopez, 1999).

2.1.10 J P Morgan's Credit Metrics

This model was introduced in 1997 and uses Monte Carlo simulation to create a portfolio loss distribution at the horizon date. It is a default risk model used to support credit analysis, calculate credit limits and assess the likelihood of default by obligor. Anderson (2000) defined it as a tool for assessing portfolio risks due to defaults and changes in the obligor's credit quality. Quality includes upgrades and downgrades in credit ratings. The likelihood of movement called migration probabilities between possible credit quality states of an obligor during a risk horizon of one year is usually established. Credit Metrics model was developed specifically to evaluate credit risk. It incorporates a methodology for assessing a portfolio's value at risk (VAR) arising from changes in counter party credit quality. It establishes an exposure profile of each counter party, represented within the portfolio, and combines the volatilities of the individual instruments (taking into account correlations between credit events) to model the volatility of the aggregate portfolio, (Fatemi & Fooladi, 2006).
Each obligor is assigned a credit rating and a transition matrix is used to determine the probabilities that the obligor's credit rating will be upgraded or downgraded or that it defaults. This model calculates the portfolio value by randomly simulating the credit quality of each obligor. The credit instruments are then re-priced under each simulated outcome and the portfolio value is simply the aggregate of these prices. The model incorporates diversification benefits, which reduce aggregate risk of stand-alone transactions (Morgan, 1997).

2.1.11 Credit Risk + Model

Credit Suisse Financial Products introduced this model for analytically calculating portfolio loss distribution. This model is based on mathematical models used in the insurance industry. It can handle thousands of exposures and uses a portfolio approach, which reduces risk through diversification. Instead of absolute levels of risk such as 0.25%, Credit Risk+ model's default rates are continuous random variables. Observed default rates for credit ratings vary over time and the uncertainty in these rates is captured by the volatility estimates (standard deviations) (Lopez, 1999). Default correlations are generally caused by external factors such as macroeconomic conditions. Instead of trying to model these correlations directly, Credit Risk+ uses the default rate volatilities to capture the effect of default correlations. It produces a long tail in the portfolio loss distribution.

Credit Risk+, marketed by Credit Suisse, is an adaptation of the Credit Suisse Group's methodology for setting loan loss provisions. It is capable of assessing risk capital requirements in an environment where illiquid loans (with little associated data) are held to maturity. Accordingly, its methodology may be more appropriate for firms with retail and institutional loan portfolios, as opposed to those with more bond-oriented compositions, (Fatemi & Fooladi, 2006). This model's strength is that the minimal data requirements made the model easy to implement and the analytical calculation of the portfolio loss distribution is very fast, (Credit Suisse Financial Products, (1997). Its weakness is that it is difficult to implement in smaller

organizations found in the informal sector like MFIs unlike in the larger and formal banking industry.

2.1.12 Credit Portfolio View Model

Wilson and Kane (1982) developed the Credit Portfolio View model. The model takes into account the current macroeconomic environment. It uses default probabilities conditional on the current state of the economy. For instance, an obligor rated BBB would have a higher default probability in a recession than in economic boom.
This takes into account specific country and industry influences in order to arrive at better estimates of default and credit migration probabilities. It incorporates the evolution of the global macro-economy into country- and industry-specific speculative default rates. It then maps these rates into cumulative migration probabilities by country and by industry. A tabulated portfolio loss distribution is conditioned by the current state of the economy for each country and industry.

2.2 Empirical literature review

Credit risk is a serious threat to the performance of credit risk operation; therefore various researchers have examined the impact of credit risk on banks in varying dimensions. In a Kenyan study, Kithinji (2010) assessed the effect of credit risk management on the profitability of commercial banks. Data on the amount of credit, level of non-performing loans and profits were collected for the period 2004 to 2008. The findings revealed that the bulk of the profits of commercial banks are not influenced by the amount of credit and non-performing loans, therefore suggesting that other variables other than credit and non-performing loans impact on profits. Kargi (2011) evaluated the impact of credit risk on the profitability of Nigerian banks. Financial ratios as measures of bank performance and credit risk were collected from the annual reports and accounts of sampled banks from 2004-2008 and analyzed using descriptive, correlation and regression techniques. The findings revealed that credit risk management has a significant impact on the profitability of Nigerian banks. It concluded that banks' profitability is inversely influenced by the levels of loans and advances, non -performing loans, interest rates and deposits thereby exposing them to great risk of illiquidity and distress. Similarly, Epure and Lafuente (2012) examined bank performance in the presence of risk for Costa-Rican banking industry during 1998-2007. The results showed that performance improvements follow regulatory changes and that risk explains differences in banks and non-performing loans negatively affect efficiency and return on assets while the capital adequacy ratio has a positive impact on the net interest margin. More recently, Al-Yatama et al. (2020) examined the effect of risk factors on financial performance of insurance companies listed at Kuwait Stock Exchange (KSE) over the period 2009 – 2017. The research used credit, operational and liquidity risk as independent variables and return on assets and return on equity as dependent variables. The study found out that financial performance of Kuwaiti insurance companies is mostly affected by operational risk and credit risk. In another recent paper, Munangi and Sibindi (2020) examined the impact of credit risk on the financial performance of 18 South African banks for the period 2008 – 2018. Panel data techniques were employed to test the nexus between credit risk and financial performance. The study found out that credit risk was negatively related to financial performance.

2.3 Relevance of Literature Review

The lessons drawn from the literature review above are that poor and lax credit risk management practices increase the effects of credit risk on corporate performance. This implies that the survival of an institution solely depends on good credit risk management without ignoring the impact of other risks like interest rate risk, business risk, financial risk and liquidity risk. The Reserve bank of Zimbabwe closely monitors banks on good credit risk management while applying Principles of the Basel Committee on bank supervision. The RBZ has strongly recommended sophisticated methods of measuring credit risk such as stress testing and value at risk to ensure bank failures arising from poor credit risk management are prevented. Another lesson can be drawn from the use of initial screening and credit investigations through the use of credit references, next of kin and agents such as Dan and Bradstreet, in order to gather enough information about a client before it is too late. Indeed, credit risk management is of paramount importance as far as risk minimization and business performance enhancement and/or success is concerned. Good credit risk management policies and systems enable management to make good lending decisions.

3.0 METHODOLOGY

3.1 Data

The research work is both inferential and descriptive in nature. The research purely makes use of secondary data. The data were on six economic variables that is Credit Risk, Corporate performance, Interest rate, Inflation rate, Capital injection and Number of branches. This research will cover from 2006 up to 2013. Inflation rate data was gathered from ZimStats while the rest of the data was collected from Taroth Finance (Pvt) Ltd.

3.2 Estimation procedure

The researchers are going to use the OLS estimation procedure because of its best linear unbiased estimator (BLUE) feature, Gujarati (2004).

3.4 Empirical model

In order to analyse the impact of credit risk on corporate performance, the researchers will modify the financial ratio model by Kargi (2011) and estimate it using the Ordinary Least Squares (OLS) econometrics methodology. The model measured corporate performance with Return on Asset (ROA) as a function of the ratio of Non-performing loan to loan & Advances (NPL/LA) and ratio of Total loan & Advances to Total deposit (LA/TD) used as indicators of credit risk. The model was specified in functional form as follows:

ROA= f (NPL/LA, LA/TD)……..……..... (1)

Where;

ROA: Return on Assets

NPL: Non-Performing Loan

LA: Loan and Advances

TD: Total Deposit

In this study the researchers are going to modify the model by dropping one variable, TD because the study is specifically looking on the Microfinance Company (Taroth Finance) rather than banks where bank deposits are used. Thus the researchers introduce other variables that affect ROA as a measure of corporate performance. The variables are inflation, interest rates and the number of branches. Hence a mathematical model of this form follows:

$ROA = f(NPL_t/LA_t, IR_t, NOB_t, INF_t)$……..... (2)

The econometric model; is therefore, specified as follows:

$ROA = \beta_0+\beta_1 NPL/LA+\beta_2 IR+\beta_3 NOB+\beta_4 INF+\mu_t$..... (3)

Where;

β_0 = Constant parameter/Intercept

$\beta_1, \beta_2, \beta_3, \beta_4$ = Parameters to be estimated

NPL/LA = Non-performing loan to loan Advances in period *t*

IR_t, = Interest Rate in period *t*

NOB_t = Number of branches in period *t*

INF_t = Inflation Rate in period *t*

μ = Error term

3.5 Justification of Variables

3.5.0 ROA (Return on Asset) - *regressand variable*.

ROA is going to be measured by profit obtained on total assets (cash employed) ROA is used in this study because it is the best method in measuring the corporate performance of microfinance since it actually reflects the financial status of the business. In general economic theory, high ROA means high business growth (Coley, 1992)

3.5.1 NPL/LA (Non-performing Loan to loan & Advances – *key regressor variable.*

NPL/LA is used as a tool to measure credit risk (CR). Credit risk can be defined as potential losses from the refusal or inability of credit customers to pay what is owed in full and on time, (Coyle, 2000). Baumback and Lawyer (1998) were in agreement to the fact that credit has its own attendant risk(s), that there is a trade-off between risk and return and that credit reduces an individual's inconvenience due to cash shortage. By so doing the lender loses the value of the funds originally given to the debtor, time and costs expended attempting to collect payment, so it is essential to assess the amount of risk a particular debtor presents. There is inverse relationship between credit risk and corporate performance (Coyle, 2000).

3.5.2 Interest Rate - *regressor variable*

An interest rate is the rate at which interest is paid by a borrower (debtor) for the use of money that they borrow from a lender (creditor). A relatively high interest rate charged on

borrowers has a negative impact on borrowing Gross and Trevino (1996). Interest rates are included in this research because corporate performance varies inversely with interest rates. A high interest rates figure means that the company's profit is in deficit because the borrowers will be discouraged to borrow; therefore growth of corporate performance is inversely related to interest rates charged on borrowing. Fluctuations in interest rates introduce uncertainty in company's performance.

3.5.3 Inflation Rate - *regressor variable*

Inflation is the macro variable that can affect the corporate performance of a company. The variable was included in the model because Zimbabwe experienced hyper-inflation in 2007 and 2008 which affects the company performance, also since then the inflation rate fluctuates unevenly. This leads to clients' inability to repay their loan on due since it erodes the customers' disposable income.

3.5.4 Error Term

Error term is the variable in a simple or multiple regression equation that contains unobserved factors that can affect the dependent variable (Wooldridge, 2004). The error term also include measurement errors in the observed dependent or independent variables. In this study the error term captures all factors that affect corporate performance but have not been taken into account explicitly.

4.0 DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 Descriptive Statistics

Table 4.0 Descriptive statistics

	ROA	**CR**	**IR**	**INF**	**NOB**
Mean	66.75000	30.59375	5576.628	30.78125	24.75000
Median	70.00000	26.50000	0.300000	30.00000	26.00000
Maximum	83.00000	71.00000	47176.40	40.00000	35.00000
Minimum	40.00000	10.00000	-2.800000	20.00000	5.000000
Std. Dev.	10.41711	17.93332	13100.27	5.695127	8.980265
Skewness	-1.096234	1.296472	2.424526	-0.443007	-0.464247
Kurtosis	3.432961	3.502309	7.555281	2.602925	2.212116
Observations	32	32	32	32	32

The data in Table 4.0 shows the descriptive statistics showing measures of central tendency and some evidence of non extreme values meaning that there is no influence of outliers on data set. The standard deviations from the mean from the entire variable are approximately equal except

interest rates (IR) which have a very high standard deviation of 13100.27 due to the volatility of money supply during the period under study. The measure of skewness indicates that most variables are slightly negatively skewed except Return on Asset (ROA) (-0, 96234), Inflation Rate (INF) (-0, 941571) and Number of Branches (NOB) (-0, 46427). The measure of kurtosis indicates that data of all variables are leptokurtic. The rule of thumb for kurtosis is that it should be approximately equal to 3 for normally distributed variables. Therefore, kurtosis and skewness are within the acceptable range for most variables confirming the reasonableness of the data.

4.2 Diagnostics tests

In order to check the robustness and validity of the model, the researchers carried out theses tests: autocorrelation, heteroscedasticity, multicollinearity and model specification.

4.3 Correlation Matrix

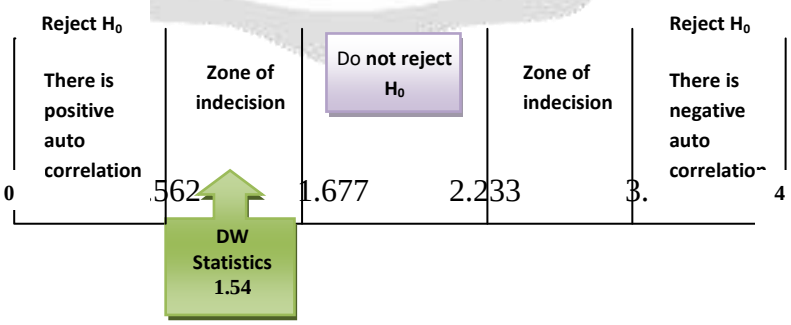
The correlation matrix is used to test for multicollinearity. If the variables are highly correlated that is greater than 80% it shows that there is the problem of multicollinearity.

Table 4.1 Correlation Matrix

Variable	ROA	CR	INF	IR	NOB
ROA	1.000000				
CR	-0.648267	1.000000			
INF	-0.358291	-0.085119	1.000000		
IR	-0.508067	0.210162	0.403266	1.000000	
NOB	0.529310	-0.202958	-0.357348	-0.205357	1.000000

The results above shows that the variables used in the study are not highly correlated because they are less than 0.8. There is no problem of multicollinearity and therefore, the OLS assumption holds: that there should be no multicollinearity between variables under consideration.

4.4 Durbin Watson Test (DW)



The estimated equation has a DW statistic of 1.54 which lies in the region of indecision where it is not possible to determine whether there is perfect positive or negative autocorrelation. The

DW is not conclusive therefore we have to perform another test to try to finalise the conclusion. Considering the graph, DW-statistic (=1.540...) lies between (=0.562...) and 1.677.

4.5 The Test Results are as Follows:

H_0 = there is no positive or negative serial autocorrelation and H_1 = there is positive or negative serial autocorrelation. The decision rule is illustrated below, where n is the number of observations (32) and k includes explanatory variables and a constant thus k=5 and the table values of d_L =0.562 and d_U =1.677.

4.6 LM test for Autocorrelation

The LM test is used to test for autocorrelation. The test has the following hypothesis and decision rule.

H_0: there is no autocorrelation

H_1: there is autocorrelation

Table 4.2

F-statistic:	0.735106	Probability	0.398708
Obs*R-squared:	0.764953	Probability	0.381783

Since Probability is greater than 0.1 we fail to reject H_0 that there is no autocorrelation among variables because the probability (p-value = 0.398708) is insignificant and conclude that there is no autocorrelation. This is statistically correct because the OLS assumption of no serial autocorrelation holds. In addition this test also compliments the results of the correlation matrix shown on the table above.

4.7 Heteroscedasticity (White Test)

Table 4.3

F-statistic:	4.406224	Probability:	0.002422
Obs*R-squared:	19.36476	Probability:	0.013026

H_0: there is no heteroscedasticity

H_1: there is heteroscedasticity

We fail to reject H_0 at 1% level of significance that there is no heteroscedasticity because the p-value (p = 0.002422) is significant and conclude that there is heteroscedasticity. Therefore, the OLS assumption of homoscedasticity does not hold. Hence the researchers are going to use the "do nothing" approach to solve for heteroscedasticity. The alternative methods to correct for heteroscedasticity are the Weighted Least Squares (WLS), the Generalized Least Squares (GLS) to mention just a few. However the researchers cannot perform this because it is beyond the scope of this research.

4.8 Goodness of Fit Test

The R^2 value is equal to 0.713010; as a result it implies that at least 71% of variation of corporate performance is explained by: credit risk, interest rates, inflation rate and the number of branches that a company has and this also shows that the sample points along the regression line are not diverse. Also this shows that the model has a very high explanatory power. The adjusted R^2 is equal to 0.670493 which means that after taking account of the degrees of freedom associated with the variables, the model still explains the same amount of variations and it is sufficient for this study to conclude the explanatory power of the independent variables in explaining the change in dependent variable. However since R^2 is not very high, this implies that there is no problem of multicollinearity.

4.9 Unit Root Test

Most time series data are not stationary and to induce stationary the variables may became stationary at different levels. According to Engle and Granger (1987) if you regress a model with variables that are integrated of different orders you are likely to suffer from the problem of spurious regression. For stationarity test we use Augmented Dickey-Fuller (ADF) statistic and we test the null hypothesis that there is a unit root and reject the null hypothesis if the ADF statistic is greater than the critical value at 5% and conclude that the series is stationary. Stationarity tests are done to reduce impressive-seemingly regression results, which are wholly spurious (Mukherjee, 1998).

Table 4.4 Unit root test (ADF test in levels)

Variable	ADF Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value	DECISION
ROA	-2.2451	-3.6661	-2.9627	-2.6200	Not stationary
CR	-2.9450	-3.6661	-2.9627	-2.6200	Not stationary
INF	-2.4679	-3.6661	-2.9627	-2.6200	Not stationary
IR	-1.6548	-3.6661	-2.9627	-2.6200	Not stationary
NOB	-2.0071	-3.6661	-2.9627	-2.6200	Not stationary

We tested for stationarity in levels and all the variables were not stationary. Therefore the ADF test was performed in 1st difference and the results obtained are presented below:

Table 4.5 Unit root test in first difference

Variable	ADF Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value	DECISION
ROA	-3.5989	-3.6752	-2.9665	-2.6220	Stationary
CR	-6.5777	-3.6752	-2.9665	-2.6220	Stationary
INF	-4.0460	-3.6752	-2.9665	-2.6220	Stationary
IR	-4.4293	-3.6752	-2.9665	-2.6220	Stationary
NOB	-4.4293	-3.6752	-2.9665	-2.6220	Stationary

We tested for stationarity again in first difference. After testing for stationarity in first difference all variables became stationary meaning that the variables are integrated of order one 1(1). Hence we can estimate the model in its levels using OLS without facing the problem of spurious regression since all variables are on the same wave length.

4.10 Testing for the Significance of the Whole Model

The F-statistic is 16.76998 and the F-statistic probability is 0.000001.

H_0: the model is not significant

H_1: the model is significant

Since the probability is greater than 0.l, we are rejecting H_0 at 1% and conclude that the model is significant, which implies that the model is correctly specified.

4.11 Presentation of Results

The results of the OLS regression with ROA being the regressand variable and CR, IR, INF, and, NOB being the regressor variables are indicated in table below. These variables are now in their first differences; because, as indicated above; they are all integrated of order one.

Table 4.6 Results from OLS

Variable	Coefficient	Std error	T- statistic	Probability
Constant	84.66127	7.977724	10.61221	0.0000
CR	-0.320988	0.064285	-4.993173	0.0000
IR	-0.486706	0.226497	-2.148843	0.0408
NOB	0.341659	0.132278	2.582897	0.0155
INF	-0.000158	9.74E-5	-1.622655	0.1163
R^2= 0.713	**Adjusted R^2= 0.670**		**Durbin Watson statistic = 1.540**	
F-statistic= 16.76998	**Prob(F-statistic)= 0.000001**			

4.12 Interpretation and Discussion of the Results

4.12.0 Credit Risk (CR)

From the results above, CR has a negative sign and is statistically significant at 1% level of significance as indicated by the probability of 0.0000. A 1% decrease in credit risk will lead approximately 0.32% increases in corporate performance. These results conform to the research hypothesis and the expected sign. The results are consistent with previous studies such as Kargi (2011), Al-Yatama et al. (2020) and Munangi and Sibindi (2020). However, the results contradict with the previous study done by Kithinji (2010). Kithinji found that the bulk of profits of commercial banks are not influenced by the amount of credit and non performing loans, therefore suggesting that other variables other than credit and non-performing loans impact on profits.

4.16.1 Interest rate (IR)

The result has a negative sign and is statistically significant at 5% level of significance as indicated by the probability of 0.0408. A 1% decrease in interest rate will result in approximately 0.49% increase in corporate performance. According to economic theory an increase in interest rates will result in an increase in the cost of capital, thereby impeding the capacity of the company to generate profits. The result conform with the expected outcome and also consistence with the empirical study of Kargi (2011) who found that interest rates on borrowing negatively affect profitability on Nigerian banks.

4.16.2 Number of Branches (NOB)

The results have a positive sign and are statistically significant at 10% level of significance as indicated by the probability of 0.0155. A 1% increase in number of branches will lead to approximately increase in corporate performance by 0.34%. The results conform to the expected outcome. This outcome is consistent with the findings of Al-Khouri (2011) who did a similar study in Nigeria using cross sectional data.

4.16.3 Inflation (INF)

The variable is statistically insignificant since the probability of 0.1163 is greater than 0.1. This means that we fail to reject the null hypothesis that the variable is not significantly different from zero. Hence the variable is irrelevant in this model because it does not affect corporate performance.

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusions

We carried out an empirical study on the impact of credit risk on profitability on the Zimbabwean microfinance sector using time series data for the period 2006 to 2013. OLS regression was used to analyze the data. The study also looked at relevant theories and empirical studies that are related to the study area. The methodology section of the study has basically looked at model development and justification of the variables. Furthermore, the study has adopted the ordinary least squares methodology and followed the empirical study by Kargi (2011). The study used a sample size of 32 quarterly observation of credit risk, interest rates, number of branches and inflation data. All findings were interpreted and the outcomes of each variable were evaluated against their respective expected signs.

5.2 Recommendations

i. There is need to reduce credit risk of the microfinance companies so as to increase corporate performance. This will boost the value of these microfinance companies, thus internal and external growth.
ii. Inflation rate is found to be insignificant in determining profitability in the microfinance sector of Zimbabwe. Therefore police makers should not be worried much about the behaviour of this variable on corporate performance since it will waste resources.
iii. The number of branches has been found increasing corporate performance. Therefore, the policy message following these findings is that the policy makers should device measures to increase the number of branches in the microfinance sectors across Zimbabwe so as to improve and promote economic growth via increased tax base and employment.

iv. Furthermore, it is recommendable that the microfinance companies should reduce their interest rates on borrowings. This will increase corporate performance in the microfinance sector and reduce the chances of defaulting. The main policy message in this regard is that the government of Zimbabwe should advise these microfinance companies to charge favourable interest rate on borrowing for example 25% per month since this does not reduce the corporate performance of the microfinance companies.

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