



## **INSTITUTIONAL DETERMINANTS OF NON-PERFORMING LOANS OF DEPOSIT MONEY BANKS IN SUB-SAHARAN AFRICA**

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### **Abstracts**

*In the banking industry, the risk of Non-Performing Loans (NPLs) is quite substantial and its minimisation is essential for the growth of the industry and the economic development of Sub-Saharan Africa countries. This study focused on institutional factors as key determinants of NPLs of Deposit Money Banks in Sub-Saharan Africa. The study adopted an ex-post facto research design using a panel data covering the period 2006-2020. The data was collated from the World Bank Governance Indicators, World Bank Development Indicators and Heritage Foundation Database for the period under study. This study applied System GMM technique with an elaborated econometric method, based on a panel set from 23 Sub-Saharan African countries. Four institutional factors; namely control of corruption with coefficient value of (0.44%), financial freedom with coefficient value of (0.13%), rule of law with coefficient value of (0.341%) and regulatory quality with coefficient value of (-0.618%) were all significant on NPLs at (5%,) respectively. In conclusion, for banks in Sub-Saharan Africa to reduce the issues of NPLs and enhancing credit quality, both internal and external factors should be put into consideration for sustainable financial system stability. The study therefore, recommended among others, that government of Sub-Saharan Africa countries need to adopt effective legal restructuring with respect to bad loans, improve the functioning of their regulatory bodies, reduce corruption and government interference in banking businesses so as to decline the issues of NPLs.*

**Key Words:** Non-Performing Loans, Institutional Factors, GMM, Sub-Saharan Africa

### **INTRODUCTION**

The banking institution plays important roles in the economy of all nations. In fact, as financial intermediaries, banks play a key role in pushing forward economic growth, through the mobilization of national savings and using them to finance productive economic sectors. The primary function of banks is mobilising deposits from surplus units



to deficit units in the form of loans and advances to various sectors. Incidentally, just like any business organisation, banks also seek to make profit. The primary source of profit to banks is through loans and advances. Specifically, banks grant loans and advances to individuals, business organisations as well as government with the primary aim of making profits for their shareholders. However, loanable funds involve default risk when parts or whole of the loan granted is not repaid as per the terms and conditions of the loan. This risk described as credit risk is also known as non-performing loans (Khan, Siddique & Sarwar, 2020).

The management of banks' asset portfolios has been a major challenge in the Sub-Saharan African banking industries due to issues of Non-performing Loans NPLs (Oni, 2019). In fact, reports for Deposit Money Banks in most of the Sub-Saharan Africa SSA countries showed NPLs figures that were higher than the bank regulatory and prudential threshold of 5% stipulated under Basel II (Mukoka, 2020). Consequently, this elevation in credit risks has taken a bite out of credit growth in the SSA region. Specifically, issues ranging from political instability, civil wars, energy crisis, weak legal system, terrorism attack to infrastructural crises are major challenges facing most Sub-Saharan African countries which have severely set back their development (Ojo, 2020; Farzanegan & Gholipour, 2021.). These institutional crises have been attributed to the root cause of the NPLs of banks in the region.

Generally, it has been confirmed in the existing literature that deterioration in the quality of credit is likely to occur during credit boom especially in a weak regulatory and institutional environment. Precisely, this is the situation in most Sub-Saharan African countries similar to other developing countries, which are mostly characterised by inefficient judicial systems, weak financial freedom, corrupt bureaucracy or political institutions among others (Boudriga, *et al.*, 2010; Kuutol, *et al.*, 2014; Alam, Hag & Kade, 2015). These features hinder either the process of extending credit or the process of control and recovery once the loan is granted (Creane *et al.*, 2004). That is the reason why the World Bank emphasised the importance of building effective institutional environment for banks to operate, in order to achieve greater credit quality and overall financial development (Abid, 2016).

In consideration of the existing studies on NPLs in SSA, it is germane to inquire if institutional factors affect NPLs in SSA as less attention is paid on it by most authors in the region (Boudriga, *et al.*, 2010; Mpofu, & Nikolaïdou, 2019; Olarewaju, 2020). Hence, there is a need for this study to fill this gap. Therefore, premised on this background, the objective of this study is to investigate the institutional determinants of non-performing



loans of Deposit Money Banks in Sub-Saharan Africa. The study is limited to Sub-Saharan African region. The choice of the region is based on the fact that Sub-Saharan African economies have continually witnessed structural issues, ranging from commodity price fluctuations, persistent inflation, low GDP growth rate to spill-over effects from external shocks among others (Mpofu & Nikolaidou, 2019).

## **LITERATURE REVIEW**

### **Non-Performing Loans**

The term “Non-performing Loans” is used interchangeably with bad loans and impaired loans as identified in Fofack (2005). Berger and De Young (1997) also consider these types of loans as “problem loans or credit risks”. Therefore, these descriptions are used interchangeably throughout this study. Normally, a non-performing loan occurs in a situation where both principal and interest on the loan are outstanding for a long time contrary to the terms and conditions contained in the loan contract agreement. The Basel Committee on Banking Supervision described credit risk as to the potential that a bank’s borrower or counterparty may fail to meet its obligations in accordance with agreed terms (Basel, 2006). The definition of “impaired loans” under International Financial Reporting Standard (IFRS) 9 requires a more granular assessment of credit risk in comparison to IAS 39. Under IFRS 9, applicable entities must now place financial instruments into three distinct stages, including “performing” (Stage 1), “underperforming” (Stage 2) and “non-performing” (Stage 3), rather than the “unimpaired” and “impaired” categories under IAS 39 (Hohl, Sison, Stastny & Zamil, 2018)

### **Institutional Factors**

The institutional environment within which the banking system operates is a very important determinant of credit quality. This study adopted the institutional factors as contained in the Worldwide Governance Indicators (WGI) model developed for the World Bank by Kaufmann *et al.*, (2008). The WGI are political stability and absence of violence, control of corruption, rule of law, regulatory quality, government effectiveness and voice and accountability. These World Bank indicators are commonly adopted in various related literature to analyse the institutional quality of a country (Boudriga, Taktak & Jellouli, 2010). This study therefore incorporated these factors alongside two other factors of financial freedom and credit information system that were obtained from the empirical studies of (Muhammad, Ammara, Abrar & Fareeha 2012; Bhattacharai 2014; Joseph, Edson, & Gwangwawa, 2012).



### **Theoretical Underpinning**

This study reviewed two theories namely the financial accelerator and the institutional theories. They are discussed as follows:

#### **Financial Accelerator Theory**

The Financial Accelerator framework was developed by Bernanke and Gertler (1989), Kiyotaki and Moore (1997) and Bernanke *et al.* (1999). They provided the theoretical explanation of the role of banks during an economic fluctuation. They explained that during expansionary periods, the financial profile of borrowers improves, asset prices increase and this euphoric situation paves the way for an increase in the demand for credit. This leads to an oversupply of credit, typically accompanied by relaxed lending standards, thus increasing credit risk. The financial accelerator theory can be linked to the “Financial theory” pioneered by Minsky (1974), also known as financial instability hypothesis, in which he attempted to provide an understanding and explanation of the characteristics of a financial crisis.

#### **Institutional Theory**

The institutional theory was developed by North (1989) who primarily analysed economic structures by explaining how institutions and institutional changes are affected by the performance of its environment. The basic concepts and premises of the institutional theory approach provide useful guidelines for analysing organisation-environment relationships with an emphasis on the social rules, expectations, norms, and values as the sources of pressure on organisations. The theory is built on the concept of legitimacy rather than efficiency or effectiveness as the primary organisational goal (Doug & Scott, 2004). This theory assumes that business organisations are influenced by broader social structures such as public and private regulation and the presence of non-governmental and other independent organisations that monitor corporate behaviour (Campbell, 2007). The objective of this study is supported by the institutional theory. Although the interaction between credit quality and the real economy has been properly established by the financial accelerator theory, nevertheless, recent empirical studies have shed light on the link between credit quality and several institutional factors, particularly since the 2007-2009 global financial crises (Bhattari 2014; Kaufmann *et al.*, 2016). Therefore, linking this theory to the study confirms that during economic boom, credit growth could escalate the growth of NPLs in banks operating in weak regulatory and supervisory environment. The bottom line is that loan quality of banks can improve if businesses are operating in a conducive environment.



## **Empirical Studies**

This study examined the previous studies on NPLs from different countries. First, Khan, Siddique and Sarwar, (2020) scrutinised the determinants of NPLs observing a case of the banking sector in Pakistan over the period from 2005 to 2017. The sample consisted of the banking sector (i.e., commercial banks) listed in Pakistan Stock Exchange over the period of 2005–2017. The study examined the profitability, operating efficiency, capital adequacy and income diversification, of commercial banks. The estimations were done by regression modelling using random and fixed effects. The findings show that the operating efficiency and profitability indicators have a negative association with NPLs but were statistically significant, while capital adequacy and income diversification have a negative association with NPLs but were statistically insignificant.

Also, Olarewaju, (2020) investigated the factors affecting nonperforming loans in commercial banks of some selected African lower middle-income countries. The study used a dynamic panel regression analysis on 110 commercial banks from nine countries for the years 2010–2017 and a total of 880 observations were examined. The system generalised method of moments found that lagged nonperforming loan, lending rate, capital adequacy, credit growth, cost income ratio, as well as real interest rate, were the significant factors affecting nonperforming loans in lower middle-income countries' banking sector. Hence, the study recommended that commercial banks ought to establish regulations to amend their policies regarding credit advancement in alignment with the factors highlighted above. Likewise, banks need to ensure their loaned-out funds are dedicated to the envisioned purpose via improved credit monitoring that would spur economic sustainability.

In addition Mukoka, (2020), examined the impact of capital adequacy ratio on non-performing loans amongst the commercial banks in Zimbabwe during the Dollarisation era. The data covered period 2009-2015. The study applied Ordinary Least Squares to estimate the regression equation. After all necessary statistical tests were undertaken, diagnostic tests were done to determine if the model is reasonably well specified. The estimation results revealed that there is a significant inverse relationship between capital adequacy ratio and non-performing loans.

In Sub-Saharan Africa, Mpofu and Nikolaïdou (2018) investigated the macroeconomic determinants of credit risk in the banking system of 22 Sub-Saharan African economies. The studies employed GMM method of analysis to control for possible endogeneity problem in the data employed. Their findings show that an increase in real GDP growth rate has a statistically significant effect on the ratio of non-performing loans to total gross



loans. Other significant variables in the study are trade openness, inflation rate, banks' domestic credit to the private sector as a percentage of GDP, the 2008/2009 global financial crisis and global volatility. They all have positive and significant impact on NPLs.

Similarly, in the Sub-Saharan Africa, Nikolaidou and Vogiazas (2017) applied a robust methodological procedure of Auto-Regressive Distributed Lag (ARDL) approach to cointegration that takes into consideration the presence of structural breaks, using additional standard unit root tests jointly with tests that allow for endogenous determination of structural breaks to examine the determinants of bank credit risk in five Sub-Saharan African countries of Kenya, Namibia, South Africa, Zambia and Uganda. The study discovered that bank-specific variables have a decreasing effect on NPLs in all countries. However, macroeconomic variable of effective exchange rate has a strong association with NPLs which is in line with Fofack (2005) and De Bock and Demyanets, (2012)

In Nigeria, Yahaya and Oni (2016) investigated the impact of macroeconomic factors responsible on non-performing loans in the Nigerian Deposit Money Banks (DMBs). A time-series data were collected from the Central Bank of Nigeria statistical bulletin that covered the period 1990 to 2013. The findings revealed that inflation, foreign exchange rate and credit to the private sectors are statistically significant to non-performing loans while gross domestic product and money supply have no significant relationship with non-performing loans of the deposit money banks in Nigeria.

In Asia, Alam, Hag and Kader (2015) investigated the causes of significant increase of Non-performing Loans (NPLs) in the banking industry of Bangladesh and its impact on the sustainability of the industry. The study revealed that the country has suffered from a large amount of non-performing loans in the banking industry mainly due to fund diversion, political and board of directors' interference, political instability, and engagement of corrupt bankers, aggressive banking due to enhanced competition, falling in real estate business, weak monitoring and lack of coordination among related parties.

In Nepal, Bhattacharai (2014) equally reported the issue of energy crisis along with some socio-political factors as determinants of NPL when he examined the perception of Nepalese bankers regarding the determinants of non-performing loan in the Nepalese commercial banks. His findings showed that bankers of Nepalese commercial banks perceive that energy crisis, lack of timely budgetary expenditure by the government and unstable political environment increase the non-performing.

Also in Nigeria, Akinlo and Emmanuel, (2014) found that long run, economic growth is negatively related to non-performing loan while unemployment, credit to the private sector



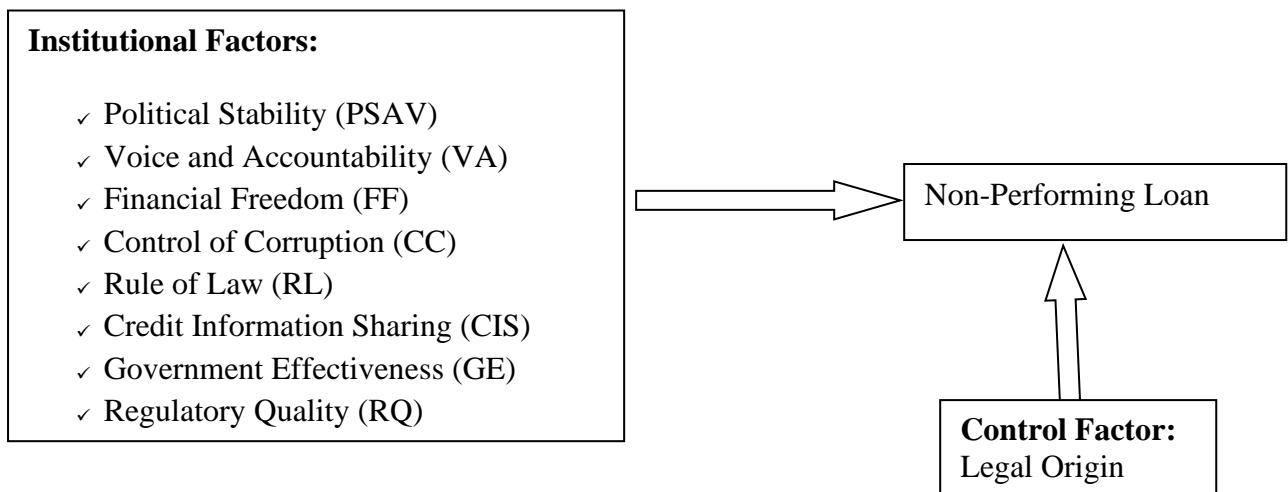
and exchange rate exert a positive influence on non-performing loans in Nigeria. In the short-run, credits to the private sector, exchange rate, lending rate and stock market index are the main determinants of non-performing loans. The significant effect of the exchange rate and NPLs in the short run is similar to the findings of Munib and Atiya (2013).

In the Central African Economic and Monetary Community (CEMAC), Djogap and Ngomsi (2012) applied panel data of 35 commercial banks from six African countries over the period 2001 to 2010. They used fixed effect model to examine the impact of bank size, GDP growth and capital adequacy ratio (CAR) on NPLs. The study found negative significant impact of CAR on the level of NPLs. This result is contrary to the one obtained by Boudriga *et al.* (2010) in which he obtained a positive relationship between CAR and NPLs. The drawbacks are similar to that of Fofack, (2005) because the study covers only a region of six African countries which cannot objectively represent the entire Sub-Saharan Africa. Also, there is the limitation of reliability and validity of the result generated from static fixed effect model which is prone to the problems of heteroskedasticity, autocorrelation and endogeneity. Also, Muhammad, Ammara, Abrar and Fareeha (2012) examined the effect of Energy Crisis alongside some macroeconomic factors based on the perception of bankers in Pakistan. The study revealed that Exchange Rate, Energy Crisis, Interest Rate, Unemployment, and Inflation, have a significant positive relationship with the non-performing loans of Pakistani banking sector.

From Middle East and North African region (MENA), Boudriga *et al.*, (2010) empirically analysed the determinants of non-performing loans (NPL) and the potential impact of both business and institutional environment on credit risk exposure of banks in the MENA region. They sampled 46 banks in 12 countries covering the period 2002–2006. They discovered that better enforcement of rule of law, better control of corruption, free voice and accountability and sound regulatory quality play an important role in reducing NPL in the MENA countries. The limitation of this study is similar to the methodological drawback of Selma and Jouini (2012) as the static panel model adopted by Boudriga *et al.*, (2010) is prone to the problems of heteroskedasticity, autocorrelation and endogeneity.

In addition to Sub-Saharan Africa studies, Fofack (2005) investigated the determinants of non-performing loans in Sub-Saharan Africa applying causality and correlation analysis. The analysis was based on data drawn from 16 African countries. The findings from the correlation results revealed a negative association between real GDP per capita and non-performing loans, while it showed a positive association with exchange rate. The limitation of the study was the weak analytical methods adopted and its inability to use aggregate data for the entire Sub-Saharan Africa. Hence, the study cannot be generalised for Sub-Saharan Africa.

**Figure 2. 1 Conceptual Framework of Determinants of Non-Performing Loans of Deposit Money Banks in the Sub-Saharan Africa**



The conceptual framework in Figure 2.1 is a figurative representation and construction that shows the relationships between variables adopted in this study. These relationships are depicted schematically and it explains the relationship between the independent and dependent variables. The dependent variable in this study is non-performing loans while the independent variables are institutional factors namely political stability, voice and accountability, financial freedom, control of corruption, rule of law, credit information sharing, government effectiveness and regulatory quality as well as the legal origin which was adopted as the control factor.

## METHODOLOGY

### Research Design

Research design provides the framework for finding a solution to any research problem under study. This study adopted the positivist assumption that all meaningful problems can be framed in comprehensible frameworks and characterised by precise hypotheses. This study, therefore adopted a longitudinal research design based on panel analysis.

### Population and Sample Size

There are 49 countries that make up the SSA including the recently independent Southern Sudan and all the African countries excluding those of Arab origin (i.e., Egypt, Morocco, Algeria, Tunisia and Libya) are regarded as Sub Saharan Africa (Fosu, 2009). However, only twenty-three (23) of these countries were chosen as the sample size for this study due

to the non-availability of data for some countries which could have been part of the sample. These countries were omitted due to lack of sufficient data on some of the key variables under investigation particularly the dependent variable of non-performing loans. In fact, a recent study by Mpofu and Nikolaidou, (2018) on SSA supported this argument. Hence, this study adopted a time-variant data covering the period 2006 to 2020 from which a panel was compiled on 23 SSA countries. The countries forming the sample are listed in Appendix A.

## Model Specification

Grounded on the Institutional theory, this study modified the model of Boudriga *et al.*, (2010) to include eight institutional factors. Six of the factors namely political stability and absence of violence, control of corruption, voice and accountability, government effectiveness, rule of law and regulatory quality were the original world governance indicators (WGI) model developed by Kaufmann, Kraay and Mastruzziet (2008) which was applied by Boudriga *et al.*, (2010). Further included in the model are the two other institutional factors namely financial freedom and credit information system were obtained from the empirical studies of Muhammad, *et al.*, (2012), Bhattacharai (2014) and Joseph, *et al.*, (2012). Also, the control variable of legal origin was included to control for possible heterogeneity. These institutional determinants of NPLs to the best knowledge of the researcher are yet to be examined on a cross country basis by existing studies of SSA. Hence, the modified model from Boudriga *et al.*, (2010) is expressed as follows:

The Dynamic form of equation (3.1) is represented as follows:

## Institutional Factors (IF) and NPLs of Deposit Money Banks in SSA

Where:

$NPL_{it}$ : is the non-performing loan of country “ $i$ ” at time “ $t$ ” (dependent variable)

$NPL_{i,t-1}$ : is the non-performing loan of country “ $i$ ” at time “ $t-1$ ” (lag of the dependent variable)

PSAV<sub>it</sub> : is the political stability and absence of violence index of country "i" at time "t".

VA<sub>it</sub> : is the voice and accountability index of country "i" at time "t".

$CC_{it}$  : is the control of corruption index of country "i" at time t

RL<sub>it</sub> : is the rule of law index of country "i" at time "t".

FF<sub>it</sub> : is the financial freedom index of country “i” at time “t”.

$CIS_{it}$  : is the credit sharing information system index of country “ $i$ ” at time “ $t$ ”.



$GE_{it}$  : is the government effectiveness index of country “i” at time “t”.

$RQ_{it}$  : is the regulatory quality index of country “i” at time “t”.

$LO_{it}$  : Legal origin of country “i” at time “t”.

Where:

$\beta_0 - \beta_{22}$  are coefficient estimates

$\mu_i$  : Time-invariant unobservable country-specific effects

$\eta_t$  : time-specific effects

$\varepsilon_{i,t}$  : time-varying error term

i : subscript i (individual country in the sample)

t : Time t

### **Measurements of Variables**

The measurements of all variables used in this study are denoted in Table 3.1 below.

**Table 3.1 Measurements of Variables**

<b>Variables</b>	<b>Acronym</b>	<b>Measurement/Indices</b>
Non-Performing Loans	NPLs	Total of non-performing loans to the gross loan of the bank
Political stability index	PSAV	Political stability and absence of violence or terrorism. Per centile rank among all countries (ranges from 0 (lowest) to 100 (highest) rank)
Voice and Accountability index	VA	It measures political and civil right. Per centile rank among all countries (ranges from 0 (lowest) to 100 (highest) rank)
Control of corruption index	CC	It measures the exercise of public power for private gain, including both minor and major forms of corruption. Per centile rank among all countries (ranges from 0 (lowest) to 100 (highest) rank)
Rule of law index	RL	It measures the quality of contract enforcement, the police and the court, as well as the likelihood of crime
Financial freedom index	FF	The index scores the degree of government intervention in banks, government influence on the allocation of credit, the extent of financial market development, and openness to foreign competition. The scores ranges from 0 to 100



Credit sharing information system index	CIS	This index measures the quality of credit information available through public or private credit bureaus. The index ranges from 0 to 6. Higher values indicating the availability of more credit information, from either a public registry or a private bureau.
Government Effectiveness index	GE	It measures the competence of the bureaucracy and the quality of public service delivery. Per centile rank among all countries (ranges from 0 (lowest) to 100 (highest) rank)
Regulatory quality index	RQ	The index captures the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. Per centile rank among all countries (ranges from 0 (lowest) to 100 (highest) rank)
Countries legal origin	LO	Dummy variables will be used with values of 0 and 1. 1= Sub-Saharan African countries with British legal origin 0= Sub-Saharan African countries with French legal origin

Source: Author's compilation, (2022).

### **Model Estimation Techniques**

The study carried out a pre-estimation panel unit root test on the variables in order to ascertain their stationarity and preclude the possibility of spurious regression. Though the dynamic panel approach is effective irrespective of whether the regressors are exogenous or endogenous, and irrespective of whether the variables are I(0) or I(1) (Pesaran and Smith, 1995; Pesaran, Shin and Smith, 1999). However, it is necessary to ensure that none of the variables is I(2). The Fisher-type based on Augmented Dickey Fuller (ADF) test for individual unit root process is the panel unit root test adopted for this study. The Fisher-ADF test is appropriate for this study, considering that banks and countries in sub-Saharan African region are heterogeneous in nature. This study used a Two-step system GMM estimator with windmeijer-corrected standard errors, small-sample adjustments, and orthogonal deviations (Windmeijer, 2005). This is In line with previous studies such as Zaman and Jurca (2008), Asari *et al.* (2011), Podpiera and weill (2007) and Mpofu and Nikolaïdou (2018) among others who have adopted the use of GMM as an estimator to examine the determinants of NPLs.

## **RESULTS AND DISCUSSIONS**

This section captures the presentation, analysis and discussions of the data used in this research work. The section initially shows all diagnostic tests conducted prior to the estimation of the specified models using GMM. The pre-estimation tests conducted include unit root test and pairwise correlation analysis.

### **Unit Root Test**

The result of the unit root test presented in Table 4.1 was the Fisher-type unit root test based on augmented Dickey-Fuller tests. It reports four test statistics namely inverse chi-squared P, inverse normal z, inverse logit L\* and modified inverse chi-squared Pm (Maddala & Wu, 1999). The results of the Fisher-type unit root test, indicate that the variables are mix of  $I(0)$  and  $I(1)$  which is a valid condition for the dynamic panel data approach. Dynamic approach is valid irrespective of whether the variables are  $I(0)$  or  $I(1)$ , and irrespective of whether the regressors are exogenous or endogenous (Pesaran & Smith, 1995; Pesaran & Shin, 1999; Pesaran, 1997). Hence, since none of the variables is  $I(2)$ . The study can safely begin the dynamic panel data estimation.

**Table 4.1: Fisher-type Unit Root Test**

<b>VARIABLES</b>	<b>P</b>	<b>Z</b>	<b>L*</b>	<b>Pm</b>	<b>Order of Integration</b>
NPL	123.0733*	-6.5631*	-6.6890*	8.0355*	I(0)
PSAV	140.2544*	-7.5858*	-7.8357*	9.8267*	I(I)
VA	107.5692*	-6.0195*	-5.8538*	6.4190*	I(0)
CC	127.0781*	-6.5776*	-6.8874*	8.4530*	I(0)
RL	122.4636*	-6.3196*	-6.4929*	7.9719*	I(I)
FF	495.6590*	-19.1560*	-28.6033*	46.8802*	I(0)
CIS	67.2848**	-3.2541*	-3.0338*	2.2191**	I(I)
GE	139.7142*	-7.2388*	-7.6512*	9.7704*	I(0)
RQ	134.0605*	-7.1801*	-7.3197*	9.1809*	I(I)
IOP	90.7254*	-5.1997*	-4.8393*	4.6629*	I(0)

*Source: Author's calculation (2022) using STATA 13*

*Notes: (\*) and (\*\*) indicate stationarity at significance levels 1% and 5% respectively.*

### **Pairwise Correlation**

The study conducted a pairwise correlation analysis before the estimation of the model. This is to investigate the bivariate relationship between the variables in the models see Table 4.2.

Table 4.2 Pairwise Correlation Matrix

	PSI	IOP	ECB	GI	RLI	FF	CIS	GFF	RQ	LO
<b>PSA</b>	1.00									
<b>V</b>	00									
<b>IOP</b>	0.03	1.00								
	28	00								
<b>VA</b>	0.03	0.00	1.000							
	10	20	0							
<b>CC</b>	0.67	-	0.224	1.00						
	30	0.091	4	00						
<b>RL</b>	0.56	0.00	0.204	0.57	1.000					
	12	21	0	75	0					
<b>FF</b>	0.46	-	0.293	0.52	0.594	1.00				
	03	0.008	6	45	3	00				
<b>CIS</b>	0.31	-	0.501	0.48	0.477	0.29	1.000			
	06	0.056	3	38	4	99	0			
<b>GE</b>	0.18	-	0.0469	0.24	0.326	0.38	0.061	1.000		
	46	0.031	1	82	4	81	0	0		
<b>RQ</b>	0.58	-	0.306	0.58	0.641	0.73	0.480	0.400	1.00	
	81	0.004	9	84	0	02	4	2	00	
<b>LO</b>	0.22	0.03	0.268	0.30	0.369	0.42	0.222	0.030	0.38	1.0000
	05	00	3	12	9	43	4	0	71	

Source: Author's calculation (2022) using STATA 13

According to Kennedy (2008) multicollinearity is a problem when the correlation is above 0.70, which was not the case here. The matrix shows that, in general, the correlation between the determinants was not strong, suggesting that multicollinearity problems were either not severe or non-existent see Table 4.2.

### Institutional Determinants of NPLs of DMBS in SSA

The model on Table 4.3 examines the impact of institutional factors on non-performing loan of DMBs of SSA. It examines the dynamic nature of model by considering the lag of the dependent variable which shows that one year lag of non-performing loan has a positive significant coefficient of 1.16%. This implies that an increase in the past value of non-performing loan will result in a 1.16% increase in the percentage of the non-performing loan share of total loans (NPL/TL) in the present period.

**Table 4.3: System Generalised Method of Moments Regression Result for Institutional Determinants of NPLs of DMBS in SSA**

Model IV (IF)				
Variable	Coefficient	Std. Error	Z-Statistic	Prob.
Lag NPL/TL <sub>t-1</sub>	1.168542	.2483037	4.71	0.000
PSVA	-.1045958	1.700298	-0.06	0.951
GE	.0071974	.1077668	0.07	0.947
CC	.4407454	.2233038	1.97	0.048
RL	.3409765	.1523498	2.24	0.033
FF	.314522	.1284903	2.45	0.014
CIS	.0865228	.2399899	0.36	0.718
RQ	-.618551	.3018977	-2.04	0.021
LO	4.162017	1.688922	2.46	0.014
VA	-.0139341	.0110301	-1.26	0.206
CONS	1.302866	3.097342	0.42	0.674
Diagnostics	Coefficient	Prob.		
Wald Chi <sup>2</sup>	42.44	0.000		
Hansen Test	1.18	0.555		
AR test (1)	-1.37	0.172		
AR test (2)	0.20	0.841		

**Source: Author's Computation, (2022)**

The Table shows that the institutional factors of rule of law index, financial freedom index and control of corruption index have a positive significant coefficient of 0.341%, 0.314% and 0.441 respectively while the regulatory quality index has a negative significant coefficient of -0.618. This implies that a weak legal framework will result in 4.2% increase in banks NPL/TL while an increase in the level of corruption and weak banks financial freedom will cause non-performing loans to increase by 0.441% and 0.314% respectively.



The negative coefficient of regulatory quality index implies that an increase in the quality of regulators will reduce the effect of NPL/TL by -0.618. However, the model revealed that institutional factors; of index of government effectiveness, voice and accountability index, credit information index and political stability index have no significant effects on NPL/TL respectively.

Table 4.3 also revealed the model diagnostics result which shows that the  $\text{Chi}^2$  statistics of this model is 42.44, while the probability value is (0.000) less than 1% significance level. It was therefore concluded that the variables in the model are jointly significant and that the model is of a good fit. Hansen test for validity of instrument used shows statistic of 1.18 and probability value of (0.555). This p-value shows that over identifying restrictions are valid implying that the instruments used are valid as it is greater than 1% and 5% significance levels. The null hypothesis is therefore accepted, and it implies that in the model, the set of instruments used are valid. The AR (1) test of statistics revealed a negative coefficient value of -1.37 and a probability value of (0.172) which is more than 5% significance level. This implies that there is no presence of negative first-order autocorrelation in the residuals of AR (1). Also, the AR (2) test shows a positive coefficient value of 0.20. This also suggests the absence of second order autocorrelation as the p-value (0.841) is greater than 1% significance level. It is therefore concluded that the instruments used are valid as there is absence of second order serial correlation in the residual (Roodman, 2009).

### **Discussion of Findings**

The research objective was set to examine the effect of institutional factors on non-performing loans of Deposit Money Banks (DMBs) in Sub-Saharan Africa. Accordingly, eight institutional factors were used in the study. However, only four of these factors namely government regulatory quality index, control of corruption index, rule of law and financial freedom index were reported to have a significant effect on NPLs in Sub-Saharan Africa. The significant variables are discussed as follows:

Government regulatory quality index revealed the highest significant coefficient of -0.6185% (Absolute value) as a determinant of NPLs in Sub-Saharan Africa. The magnitude of the regulatory quality index coefficient indicates the existence of a negative relationship between regulatory quality and NPLs in the Sub-Saharan Africa which was in line with the specified aprior expectation in the model. This outcome could be because the apex banks (Central banks) who are the main regulator of banks in most SSA countries are compelled to enforce internationally-imposed regulations such as Basel Accord for banking supervision and International Financial Reporting Standards (IFRS), (Beck et al., 2011).



Hence, they are continuously under both local and international regulatory pressures to reduce their credit risk and comply with regulatory requirements which can reduce their credit risk internally. That is why the World Bank reported that Sub-Saharan Africa accounts for the largest number of regulatory reforms when compared to other regions of the world (Worldbank, 2018). This outcome corroborates the institutional theory, which postulates that bank managers herd behaviour of loosening their credit standard during economic boom to maximise profit will be possible only in a weak regulatory and institutional environment. Therefore, a stable regulatory and supervisory framework can reduce or prevent banks from taking unnecessary risks and imprudent practice. Therefore, this result further explains the importance of the regulatory environment in enhancing governance mechanisms which can reduce excessive risk-taking incentives of banks (Godlewski, 2004). This result is in line with the studies of Boudriga, et al (2010) and Ojo (2020). However, Clementina and Uzu (2014) reported a contrary finding that unpredictable government regulation had a positive effect on NPLs.

Similarly, the control of corruption index revealed a significant coefficient of 0.44% as a determinant of NPLs in Sub-Saharan Africa. The magnitude of the index coefficient indicates the existence of a positive relationship between control of corruption and NPLs in the Sub-Saharan Africa which was against the set *apriori* expectation in the model. This implies that low control of corruption plays a very essential role in the growth of NPLs in SSA. That is why Anaere (2014), testified that corruption problem is of endemic proportion in developing countries due to prevailing environment being characterised by lapses in the rule of law and inefficient judicial system crucial for good governance (Makoka, 2020). Therefore, operating in a sound environment where rules are well implemented and enforced and where corruption is controlled may improve the credit process and loan quality. The finding is against the proposition of the institutional theory based on the argument that, in a weak institutional environment where there is existence of corruption, the degree of market competitiveness are negatively impacted and thus leads to inefficient loans offering which can ultimately increase the level of NPLs in banks. That is why Johnston (2005), suggested that in societies with little democratic traditions and civil discipline, decision-makers are exposed to informal connections and other pressures from groups seeking unjustified or illegal economic rents. In this context, loan decisions of banks are affected by the intensity of pressure from political lobbying by various interest groups. Therefore, this outcome matches the findings of Kaufmann, *et al.*, (2008), Goel and Hasan (2011) and Khan *et al.*, (2020) who found a significant positive impact of corruption on the growth of NPLs. However, this is contrary to the finding of Boudriga *et al.*, (2010) who reported a significant negative impact of corruption on the growth of NPLs in the Middle East and North African (MENA) region.



Similarly, financial freedom index revealed a significant coefficient of 0.314% as determinant of NPLs in the Sub-Saharan Africa. The coefficient also showed a positive relationship between financial freedom index and NPLs in the Sub-Saharan Africa which was against the set *apriori* expectation in the model. This result implies that banks operating in most of SSA countries experienced a lot of government intervention in their banking sector which was responsible for the upsurge in NPLs within the sampled period. Perhaps, government restrictions or interference in form of priority lending to a specific sector such as agriculture and manufacturing could be associated with the high cost of banking operations which in turn led to the growth of NPLs within the region (Selvarajan *et al.*, 2013). This is why Chortareas *et al.* (2013), opined that higher degree of economy's financial freedom in the EU banking market, brought higher benefits to banks in terms of cost advantages and overall efficiency. This outcome is however, against the institutional theory which assumes that business organisations such as the banks are expected to be guided by public regulations to reduce banks vulnerability to higher credit risks (Campbell, 2007 & Chortareas *et al.*, 2013). This result, therefore, contradicted the finding of Nurja and Kufo, (2016) who obtained a negative relationship between financial freedom and NPLs.

Finally, the rule of law index revealed a significant coefficient of 0.341% as a determinant of NPLs in Sub-Saharan Africa. This positive outcome showed that there are often difficulties in enforcing loan contracts by banks in SSA. This implies that issues of non-performing loan are higher especially when there is a weak legal framework in relation to contract enforcement. Thus, this result indicates that existing laws relating to collateral and loan agreement which are expected to provide higher protection for both the bank and its borrowers are not enacted, or are often weakly implemented to improve the credit quality of banks in SSA. This suggests that banks in SSA are more likely to encounter difficulty in perfecting loan documents, take over loan security and even enforce loan recovery. That is the reason why the Central Bank of Kenya (CBK) is of the opinion that to reduce NPLs the judicial and court systems must operate efficiently and a deliberate initiative must be taken to improve the judicial system through the appointment of more judges, provision of physical facilities and amendment of relevant laws (CBK, 2001). This finding is therefore against the institutional theory which postulates that in healthy legal environment supervision and regulation contribute to promoting a sound and stable financial system (Flamini *et al.*, 2009). This finding is similar to the study of Boudriga *et al.*, (2010) where he concluded that there is need for NEMA countries to take effective measures to strengthen their legal framework, so as to improve the functioning of governmental bodies to reduce banks' credit risk and to ensure the stability of the financial system.



## **CONCLUSION AND RECOMMENDATIONS**

The study applied eight institutional variables responsible for NPLs in SSA, however, four of these factors namely; government regulatory quality index, control of corruption index, rule of law and financial freedom index were considered to have a significant effect on NPLs in the Sub-Saharan Africa. This study was able to shed light on the theoretical linkage between institutional theory and its determinants. The institutional theory was linked to how the loosening of credit standards, in turn, would depend on the existing regulatory and supervisory framework. This theory explains the role of the institutional environment in inducing or preventing banks from taking credit risks. In conclusion, for banks in SSA to reduce the issues of NPLs and enhancing credit quality, both internal and external factors should be put into consideration for sustainable financial system stability. The study therefore recommends as follows;

- 1) This study showed that high level of government interference in banks (less financial freedom) is responsible for high NPLs in SSA. Hence, the government in SSA should reduce or eliminate their policy of priority and compulsory lending of banks to sectors such as agriculture and manufacturing by allowing them to maintain some level of market power and lending decision necessary to ensure banking system efficiency and overall stability. However, it is highly recommended that policy measures that will minimise bank market power moderately should be encouraged.
- 2) That government of various SSA countries should also intensify their efforts in fighting the war against corruption or totally declare a state of emergency on corruption. This will enhance the image and integrity of their various countries and thereby reduce the incidences of NPLs associated with corruption. This can be achieved by strengthening and granting of autonomy to the anti-graft agencies in various SSA countries to vigorously fight corruption.
- 3) That governments of various SSA countries should also ensure that the judicial and court systems are operating efficiently as well as come up with a number of initiatives to improve the judicial system through the appointment of more judges, provision of physical facilities to speed up court cases with respect to bad loans and amendment of relevant laws in relation to violation of the terms of loan agreement.
- 4) Finally, there is the need for governments in SSA countries to strike a balance when implementing any prudential requirement by cautiously avoiding overly complex regulations, which might not be transparent and practicable locally in the SSA context. On the other hand, they should also avoid simple and relaxing prudential requirement which is capable of posing a serious moral hazard threat where banks might have imprudent practices.



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