THE IMPACT OF OWNERSHIP CONCENTRATION, BANK CHARACTERISTICS, INDUSTRY SPECIFIC AND COUNTRY-WIDE VARIABLES, ON THE PERFORMANCE OF THE BANKING SECTOR IN TANZANIA: A PRE-POST TREASURY SINGLE ACCOUNT ANALYSIS

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By

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A thesis submitted to the Department of Economics,

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DEDICATION

To my loving parents, Hance Mkaro and Dainess Mkaro, my lovely wife, Annagrace Usangira, and my three amazing children, Elyssa, Ethan, and Aviel Goodhope Mkaro. Your prayers and unwavering support have been my guiding light. This thesis is dedicated to you all with heartfelt gratitude. May you receive boundless blessings that surpass all measurements.

ABSTRACT

THE IMPACT OF OWNERSHIP CONCENTRATION, BANK CHARACTERISTICS, INDUSTRY SPECIFIC AND COUNTRY-WIDE VARIABLES, ON THE PERFORMANCE OF THE BANKING SECTOR IN TANZANIA: A PRE-POST TREASURY SINGLE ACCOUNT ANALYSIS

Goodhope Hance Mkaro

In the course of implementing the fiscal policy, the government of Tanzania adopted the Treasury Single Account (TSA) system in early 2016. All government ministries and agents were directed to withdraw and transfer government deposits from commercial banks to the Central Bank of Tanzania through the Treasury Single Account. Notably, since the policy's inception, it has been anticipated that commercial banks' profitability, lending activity, and deposits would decline (World Bank, 2017).

Therefore, the present study found it sensible to analyze the TSA's impact on Tanzania's bank performance across various bank classifications, bank characteristics, and industry and country-wide variables. The analysis used balanced panel data regression analysis covering 30 banks that were in existence from 2010Q1 to 2020Q4. The 2010 to 2015 phase represented a pre-TSA period, whereas 2016 to 2020 covered the post-TSA phase. Domestic and foreign banks, private and state-owned banks, and large and small banks' performances were paired and revealed mixed results before

and after TSA. However, small banks outperformed larger ones in both periods using Return on Asset (ROA), Return on Equity (ROE), and Net Interest Margin (NIM) as financial performance indicators. CAMELS ratings and cost-to-income ratios for all bank classifications recorded mixed results in both periods. Generally, financial statements analysis confirmed that TSA negatively impacted the banking sector's performance.

In light of the above, the study recommends that, among other things, commercial banks' management should invest in searching for proper ways to encourage the public to deposit with commercial banks. Moreover, banks should consider penetrating the rural areas, especially those excluded from accessing formal financial services. State-owned banks, in particular, are encouraged to divorce from issuing loans to political leaders or government officials without a proper loan recovery mechanism. Employment of advanced technologies and promotion of financial literacy are among other measures to be taken by commercial banks to address the current problem.

Keywords: Ownership, Bank Size, Bank Risks, Treasury Single Account (TSA), Tanzania, Performance, ROA, ROE. NIM, CAMELS, Cost-to Income.

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This thesis entitled **"THE IMPACT OF OWNERSHIP CONCENTRATION, BANK CHARACTERISTICS, INDUSTRY SPECIFIC AND COUNTRY-WIDE VARIABLES, ON THE PERFORMANCE OF THE BANKING SECTOR IN TANZANIA: A PRE-POST TREASURY SINGLE ACCOUNT ANALYSIS"** was prepared by GOODHOPE HANCE MKARO and submitted as partial fulfillment of the requirements for the degree of Doctor of Philosophy in Financial Economics at Universiti Tunku Abdul Rahman.

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SUBMISSION OF THESIS

It is hereby certified that **Goodhope Hance Mkaro (19ABD07061)** has completed this thesis entitled **"THE IMPACT OF OWNERSHIP CONCENTRATION, BANK CHARACTERISTICS, INDUSTRY SPECIFIC AND COUNTRY-WIDE VARIABLES, ON THE PERFORMANCE OF THE BANKING SECTOR IN TANZANIA: A PRE-POST TREASURY SINGLE ACCOUNT ANALYSIS"** under the supervision of Prof. Dr. Lin Sea Lau and Prof. Dr. Choong Chee Keong from the Department of Economics, Faculty of Business and Finance.

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DECLARATION

I, **Goodhope Hance Mkaro**, hereby declare that this thesis is based on my original work except for quotations and citations, which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at UTAR or other institutions.

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(GOODHOPE HANCE MKARO)

Date 22nd January 2024

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LIST OF ABBREVIATIONS

ATM	Automatic Teller Machine
BFIA	Banking and Financial Institutions Act
BOT	Bank of Tanzania
BOT	Bank of Tanzania bank
CAMELS	C=Capital Adequacy, A=Asset Quality, M=Management Capability, E=Earnings, L=Liquidity, S=Sensitivity to Market Risk
CMSA	Capital Market and Securities Authority
DB	Domestic Banks
EAC	East African Community
FB	Foreign Banks
FEM	Fixed Effect Model
GB	Government or State-Owned Banks
GDP	Gross Domestic Product
GMM	Generalized Method of Moments
ICT	Information and Communication Technology
LB	Large Banks
LSDV	Least-Squares Dummy Variable
MENA	Middle East and North Africa
NBC	National Bank of Commerce
NBFI	Non-Bank Financial Institution
NBS	National Bureau of Statistics
NCP	National Credit Plan

NMB	National Microfinance Bank
NPAs	Non-Performing Assets
NPLs	Non-Performing Loans
OBSE	Off-Balance Sheet Exposure
OECD	Organization of Economic Co-operation and Development
OLS	Ordinary List Square Method
PB	Private Banks
POLS	Pooled Ordinary Least Square
RBS	Risk-Based Supervision
REM	Random Effect Model
RMGS	Risk Management Guidelines
SB	Small and Medium Banks
TBA	Tanzania Bankers Association (TBA)
TRWA	Total Risk-Weighted Assets
TSA	Treasury Single Account

CHAPTER ONE

INTRODUCTION

Financial intermediaries, particularly banks, have been acknowledged as beneficial drivers of capital accumulation, technological innovation, and industrialization from the early studies of Bagehot (1873), Hicks (1969), and Schumpeter (1911). According to Wang et al. (2021), there is recent evidence that banks facilitate technology development and produce technical efficiencies for enterprises by providing credit services. The studies by Abrar et al., 2021 and Umar et al., 2021posited that the financial intermediary sector, among other things, is responsible for mobilizing savings and distributing them to other economic sectors.

Nwagu (2020) posits that financial resources are transferred from net savers to net borrowers by financial intermediaries, particularly banks. They have a significant impact on the growth process because they have an economic bearing on the productivity of financial resource investment and the allocative efficiency of financial resources.

Banks are the primary source of both long- and short-term capital finance, which makes them the growth engine of the majority of developing and many rising nations. A country's financial system is underdeveloped if its securities markets are weak or nonexistent, its legal framework is insufficient and ineffective, its financial instruments are inadequate and innovative, and its use of technology and innovation is restricted (Babarinde, 2021; Barua & Barua 2019; Mahmood et al.,2020). These factors contribute to the enormous role and power of banks in these situations. The fast

economic growth in these nations, like in many emerging economies, is mostly driven by banks; thus, any disruption to the process of raising capital might have a major negative impact on the economy (Barua & Barua, 2021). In light of the preceding, studies that are inclined into the investigation of banks' performance and their multiple determinants are highly encouraged as they shape a way of ascertaining the means of stimulating the sector's survival and growth that, in turn, works as the pillar of the financial system of developing economies.

A very close eye should be put on banks as their role in capital formation in the economy is more crucial than any other economic unit in the country's economy (Reddy, 2012). The banking business is vulnerable to numerous risks that are getting significantly complex nowadays (Ekinci & Poyraz, 2019; Isam & Malik, 2020; Nurwulandari et al., 2022; Tran & Nguyen, 2020) (Sundararajan et al., 2002). The framework for regulating and supervising the overall bank performance is of paramount importance for banks' sustainability and proper responsibility. The framework provides the necessary guidance for the banks to cope with the growing complexity and variety of exposure to risks. The CAMELS[1] rating system is a supervisory tool as it is geared toward examining banks' safety and financial soundness of banks meanwhile helping to alleviate bank failures in the shadow of risk exposure (Dang, 2011; Aminiel, 2013; Silim & Pastory, 2022).

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1 CAMELS is a short form of i) C=Capital Adequacy, ii) A=Asset Quality, ii) M=Management Capability, iv) E=Earnings, v) L=Liquidity and vi) Sensitivity to Market Risk. It is the system used by the central banks world-wide to rate the performance of banking institutions in Tanzania.

The financial sector of Tanzania is dominated by banking institutions which account for 70.4% of the sector's total assets, followed by pension funds with total assets of about 25.6% of the sector assets. The insurance sector and the remaining financial intermediaries account for 4% of each sector's total assets (BOT, 2022). In light of the above, the need to study the factors influencing banking sector performance in Tanzania is paramount, as banking institutions play a critical role in the country's economic development.

1.1 The Inception and Growth of the Tanzanian Banking Sector

1.1.1 Introduction

As a fundamental element of Tanzania's financial system, the banking industry has undergone several reforms that have contributed to its expansion and development (Kishimba et al., 2022).), There were 46 financial institutions by the end of the year 2020 (Bank of Tanzania, 2020), where foreign and privately owned banks dominated Tanzania's banking sector (Bank of Tanzania, 2021). Generally, the banking sector history in Tanzanian can be summarised in the following four significant epochs. These are (i) the period of colonial supremacy, (ii) the post-independence period and before the 1967 Arusha Declaration, (iii) the period in the middle of the Arusha declaration and before the 1991 reforms, and (iv) the post-1991 period (BOT, 2011; Bunini, 2017).

1.1.2 During the Colonial era

As highlighted in the introductory paragraph above, the Tanzania banking sector emerged in early 1990 when colonial rules initiated the banking sector development in

Tanzania. The colonial era had two phases: the German and the British. During German rule, the Deutsche bank and the Handelsbank fur Ostafrika were the only two banks established in Tanganyika in 1905 and 1919, respectively. Both were commercial banks whose aim was mainly to attend to colonial leaders and very few businesses that were prevailing at that time. History tells us that in 1918, after World War I, there was a control switch from the Germans to the British. Given the preceding, three commercial banks, namely National and grindlays bank, Standard Bank, and Barclays bank D.C.O, were established to replace the Deutsche bank and the Handelsbank fur Ostafrika. The transformation continued as the Bank of India (BoI) and the Bank of Baroda (BoB), both from India, opened their bank branches in Tanganyika in the early 1950s. The branches were concentrated in Mwanza, Moshi, and Dar es Salaam. The Ottoman Bank (Anglo-French Institution) had established its presence in Tanganyika with its branch network in Moshi, Kigoma, and Dar es Salaam. It was also the same period when the specialized/dedicated Non-Bank Financial Institutions (NBFIs) evolved for the first time (BOT, 2011; BOT, 2023).

1.1.3 During the Independence in 1961

The Banking industry had progressively grown when the country attained its independence from British rule by 1961. The sector comprised the National and Grindlays Bank, Barclays Bank DCO, Standard Bank from South Africa, and Ottoman Bank. Other institutions were the Bank of India, the Commercial Bank of Africa, the Bank of Baroda, and the National Bank of Pakistan. In addition, Non-Banking Financial Institutions that existed during the days of independence included the Land Bank (POSB), i.e., the Post Office Savings Bank, the African Productivity Loan Fund,

the Local Development Loan Fund, and some few associations involved in housing and loans. These associations were centered on serving the white settlers and Asians. During this period, the native customers were not directly benefiting from the services offered by these banks as the center of their mission was primarily to repatriate the locally generated funds for investment overseas (Binhammer, 1975).

The Government of Tanganyika had introduced some new local banks to complement those present before independence. This is because, before independence, the banking sector was dominated by foreign ownership with a more significant focus on the urban area, mainly in Mwanza, Kigoma, Moshi, and Dar es Salaam, leaving the rural area in vain. The banks were also characterized by insufficient savings and the inability to deploy funds to the profitable and efficient segments of the country's economy. It is against this background that the Government, after the independence, established new financial institutions to complement the former, and as such, in 1965, after the union of two republics, Tanganyika and Zanzibar, to form the United Republic of Tanzania in 1964, The Tanzania Bank of Commerce (TBC) was then established and that in 1966 Zanzibar's Government had established the People's Bank of Zanzibar to serve as a banker of the Government meanwhile extending financing to all the spotted state-owned institutions operating in Zanzibar. To promote the process of financial intermediation, the state of Tanzania, with assistance from external donors, formed other specialized financial institutions such as the Agriculture Credit Agency in 1962, which was later on during 1964 converted to the National Development and Cooperative Bank with the view of fostering important sectors of the economy (BOT, 2011).

1.1.4 The Period between the Arusha Declaration and before 1991

Arusha Declaration was made in 1967 and implicated how commercial banks used to operate in Tanzania. Among other objectives of the Arusha, the declaration was the nationalization of the private sector, which necessitated nationalizing all private commercial banks to establish one giant commercial bank. That being the case, the National Bank of Commerce (NBC) was formed following the merger, and it became wholly and exclusively owned by the Government. Given the preceding, assets and liabilities of the nationalized banks were merged to effect such a union. (BOT, 2011). Arusha Declaration came with a remarkable establishment of non-banking institutions as well as the development of banks and financial institutions in response to the dominance of public institutions in almost every sector. The move was, therefore, meant to nurture growth by mobilizing sustainable funds to finance several prolific industries in the economy. As a result, in 1970, the Tanzania Investment Bank (TIB) was established to run development finance for the productive sectors of the country, of which the large-scale industry was earmarked as a focal point. (Aminiel, 2013; BOT, 2011).

In 1972, the need to start developing the rural sector gained influence, such as encouraging the establishment of another NBFI, namely Tanzania Rural Development Bank (TRDB), with the view of providing financing to the formerly overlooked rural segment. Subsequently, the bank was restructured, necessitating the change of its name to Cooperative and Rural Development Bank (CRDB). Moreover, the Tanzania Housing Bank (THB) was established in the very same year to concentrate on financing commercial buildings, residential and offices in both rural and urban areas.

Other specialized NBFI were also developed to serve other essential sectors. These are Pension Funds, the National Insurance Corporation (NIC), and the Postal Office Savings Bank (POSB). During this epoch, all banking institutions were wholly and exclusively or partially owned by the state with direct control of the management, except two institutions, the Diamond Jubilee Trust Fund (DJTF) and Tanzania Development Finance Limited (BOT, 2011). Past studies also revealed the same position in this period, when there was such a narrow and sectorial specialization and financial institutions were largely state-owned (Lwiza and Nwankwo, 2002).

During this period, the supervisory role of the Bank of Tanzania was minimal; as the Institution's statutes governed the financial sector, BOT had a fragile supervisory framework during this time. Furthermore, all parastatal organizations government-owned used to source bulk loans from banking institutions in line with the approved National Credit Plan (NCP), provided that the set criteria are met (BOT, 2011).

1.1.5 The Period After 1991

Several reforms in the Tanzanian banking sector have taken place from the colonial era to the period of the financial sector liberalization. It should, however, be appreciated that the 1991 reform is marked as a significant reform, following the 1988 movement by the Government to restructure the sector. The president formed a commission to spearhead the process, and the former Governor of the Central Bank of Tanzania, ambassador Nyirabu Charles, was appointed as the chairperson. During this time, the banking sector was characterized by poor performance and high levels of non-performing assets (NPAs) that brought up increased losses. This is because most

parastatals and cooperatives, among the significant borrowers, were undergoing financial distress hence the reason for high NPAs.

Moreover, the Government was burdened due to the high subsidies it used to offer to the banks. In addition, the Government was not getting a return on investment from the money invested in these banking institutions as the same could neither declare nor pay dividends due to failure to generate profit. Given the above the Nyirabu Commission recommended that for regulatory and supervisory purposes, there should be in place the Act. As such, the Banking and Financial Institutions Act (BFIA) was implemented in 1991 to govern the behavior and financial soundness of banking institutions in Tanzania (BOT, 2011).

In light of the preceding, the Act vested BOT with the power to give banking licenses and supervise and regulate banking institutions in Tanzania. Entry of purely privately-owned domestic and foreign-owned banks was allowed in the market as well. Following the Act's enactment, many financial institutions had taken the opportunity to penetrate the market. The following list shows the name and year of entry of the said banks/financial institutions that had entered the market immediately after the enactment of the Act, as mentioned herein. These are Meridian Biao Bank Tanzania Limited in 1992, which, during the year 1995, was acquired by Stanbic Bank Tanzania. Others were Standard Chartered Bank Tanzania Limited in December 1993, Eurafrican Bank Tanzania Limited in November 1994, and Citibank Tanzania Limited in May 1995. In 1996, restructuring of Cooperative and Rural Development Bank from being wholly and exclusively owned by the Government was recommended such that

the bank became privately owned. As such, it was then renamed CRDB (1996) Bank Limited, which was later renamed as CRDB Bank PLC (BOT, 2011).

In 1997 the Government decided to restructure NBC, and forming three separate legal entities was resolved. As a result, the National Microfinance Bank Limited (NMB), NBC (1997) Limited, and CHC, i.e., Consolidated Holdings Corporation, was formed. The hasty entrants of several other banking institutions soon after the enactment of the Act did not only come with merits but also the failure of six banks and financial institutions. In 1995, Tanzania Housing Bank and Meridian Biao Bank failed, followed by Trust Bank Tanzania (TBT) Limited in 1998 and Greenland Bank Tanzania (GBT) Limited in 1999. The First Adili Bancorp and the Delphis Bank Tanzania Limited followed suit in 2000 and 2003, respectively. However, except for only two banks, the Tanzania Housing Corporation, and the Greenland Bank, which were liquidated, the other victims were taken over by other banks as their failure was not associated with insolvency but due to the shortcomings of their parent banks. Given the preceding, no depositor lost a single cent (BOT, 2011).

In the course of enabling banking services to the unprivileged areas, the Tanzanian Government encouraged the establishment of community banks, regional or provincial as well as financial institutions in several parts of the country. Amendment of the BFIA was effected in April 2003 to empower BOT to specify the minimum capital requirements for forming regional or provincial banks and community banks. As a result, there were eight community banks at the end of 2010. These are Mwanga Community Bank, Mbinga Community Bank, Mufindi Community Bank, and Dar es

Salaam Community Bank, which was later converted into a full-fledged commercial bank in 2012. Others are Kilimanjaro Cooperative Bank Limited, Njombe Community Bank, Tandahimba Community Bank, and Kagera Farmers' Co-operative Bank, which collapsed in 2017 (BOT 2011; BOT, 2018).

The Government approved the framework to guide microfinance activities in the country in 2002 by implementing the National Microfinance Policy. The policy allowed practitioners to suggest the best microfinance and microcredit practices to improve microfinance and microcredit activities in the industry. Against this background, the amendment of the BOT Act 2006 was necessary to pave the way for the introduction of supervision and regulation of microfinance and microcredit institutions in the country (BOT, 2011).

The need for credit reference bureaus was considered necessary in enhancing the system for credit information sharing. As a result, the then 1995 BOT Act was amended by creating a window for the development and overall supervision of the credit reference bureaus. In light of the preceding, BOT had prepared the guidelines for management and ownership of the credit information bureau, of which the Association of Bankers in Tanzania (TBA) had taken charge of ownership, management, and operations of the customers' credit history and information in compliance with the set guidelines. In light of the preceding, on 14th September 2004, TBA was granted a provisional license to operate the credit reference bureau. However, TBA could not capture all the required borrowers' information due to a lack of capacity. Given the preceding, the BOT Act 2006 gave a window for establishing

the Credit Reference System in Tanzania. The Act has vested BOT with the power to provide and seize licenses, regulate the private credit reference bureaus, and administer the databank (BOT, 2011).

Banks and financial institutions licensed by BOT are bound to send credit information and off-balance sheet operations to the data bank for validation and merging information. Only the licensed credit reference bureaus are granted access to the credit information. In addition, the bureaus are encouraged to liaise with other service providers such as external debt collectors, telecommunication companies, register of companies, and public records by the courts as much as possible to collect enough information about the borrowers. Banks and financial institutions will, therefore, be required to buy credit reports from the credit bureaus to have a proper insight into the borrowers. In light of the above, in May 2010, the databank and credit bureau regulations were gazetted in line with the requirements of the Act, and a public notice was issued with the view of encouraging private institutions to apply for a license from BOT to run as a credit reference bureaus in Tanzania. In the same token, BOT had initiated the process of putting the system at BOT to serve as a Databank for Credit Reference (BOT, 2011).

By the time the credit reference bureau system was initiated, the banking sector in Tanzania had grown progressively. As of 31st December 2010, there were forty-two (42) banking institutions with four hundred seventy-five (475) branches and agencies across the country. However, 156 (33%) of the 475 branches and bank agencies were concentrated in Dar es Salaam city, while 34 (7%) were in Arusha and Mwanza. It was

also during the same period when four banking institutions, namely, CRDB, NMB, Kenya Commercial Bank, and Dar es Salaam Community Bank, were listed on the exchange market. In contrast, Standard Chartered Bank Tanzania Limited, PRIDE Tanzania, and Barclays Bank Tanzania Limited had their corporate bonds floated and got listed at DSE, i.e., Dar es Salaam Stock Exchange Market (BOT, 2011).

It should be appreciated that after the banking sector liberalization, a significant improvement was observed in the banking industry. The sector was dominated by increased profitability due to substantial improvements in asset quality, superior banking services due to high competition, and high usage of ICT services that improved customer services. The introduction of ATMs is substantial evidence of the effective use of ICT during the liberalization of the banking sector. Others are enhanced corporate governance, increased branch network that facilitated financial sector deepening, and improved lending activities to the private sector (BOT, 2011).

1.1.6 Introduction and Adoption of the Treasury Single Account (TSA) System in Tanzania

Following the 2016 government notice inquiring all public institutions (ministries, public corporations, and local government authorities) to withdraw and transfer government deposits from commercial banks to the Central Bank of Tanzania (BOT), mixed feelings arose among the sector's stakeholders. As a result, public institutions were allowed to retain only one bank account with commercial banks and keep a minimum deposit to help them carry out their regular monthly transactions per their projected cash flows, ensuring that government funds are controlled through the

Treasury Single Account (TSA) system (Citizen, 2016; Silim & Pastory, 2022). It is noteworthy that, TSA is a bank account providing the government with a consolidated, unified view of its cash resources. All government transactions are managed by it using a network of connected bank accounts that follow the cash and treasury principles (Ezinando, 2020). According to Echekoba et al. (2020), TSA serves as a remedy for the financial management information system, improving the control and management of the government's cash resources. The motive behind TSA adoption in Tanzania came after the East African Community Monetary Union (EAMU) accords that were signed in 2000. Partner states were urged to consolidate their cash holdings to improve the efficiency of public fund control. By 2007, member states were required to effectively operationalize the TSA system for the agreement above to come into effect (Gupta et al. 2012; Mwambuli & Igoti, 2021). In light of the preceding, the Tanzanian government began implementing the Treasury Single Account (TSA) system in early 2016 (The Citizen, 2016: Silim & Pastory, 2022). Consequently, all public entities (government ministries, departments, and agencies) were required to transfer government deposits from commercial banks to the central bank through a Treasury Single Account. A decline in bank deposits was expected to result from this decision (World Bank, 2017).

Several economic analysts commented that most commercial banks would face severe liquidity challenges because, as the notice was issued, statistics estimated that more than 600 billion shillings were in commercial banks' accounts; hence, the withdrawal of the funds would pose a severe liquidity squeeze. On the other hand, other scholars argued that such a move would significantly improve the Government's revenue

management, although this action could cause a sudden rise in interest rates. The above notwithstanding, the Government would be able to control its finances and gain higher interest rates on loans that BOT would be lending to commercial banks. Consequently, the move would cause an increase in interest rates as banks would struggle to cover the cost of the fund. An argument from another point of view edged that, the Government's decision to withdraw its money from the banking institutions and transfer to BOT was not good as chances for executives to misuse the same are high because of the direct access to the fund.

Furthermore, the move to withdraw and transfer deposits from commercial banks to BOT would pose challenges to commercial banks to have sufficient capital, and in turn, many banks would have no choice but to raise interest rates. This would, in turn, reduce public and private sector relationships. Another school of thought came with the argument that the impact of the withdrawal of government deposits would depend on how much money the Government was saying was available to the banking institutions (The Citizen, 2016).

1.1.7 An Overview of the Overall Tanzania Banking Sector Performance from 2010 to 2020

During this period (2010 to 2020), the sector's return on equity has been on a decline stance. It has been noted that during 2011 ROE had slightly increased; however, from 2012, it started declining until 2019, when a sudden rise was observed. It should also be appreciated that from the year 2016 to the year 2018, a strident decline was observed. Regarding return on assets, a relatively constant trend has been observed.

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However, from 2016 to 2018, ROA declined conspicuously before rising again in 2019. Given the preceding, the need to carry out this study was paramount to link the 2016 moderating impact of the Treasury Single Account (TSA) on bank performance. (Figure 1.1 and Table 1.1 summarize the overall sector's performance during the selected period).

Figure 1. 1 Overall Banking Sector Performance
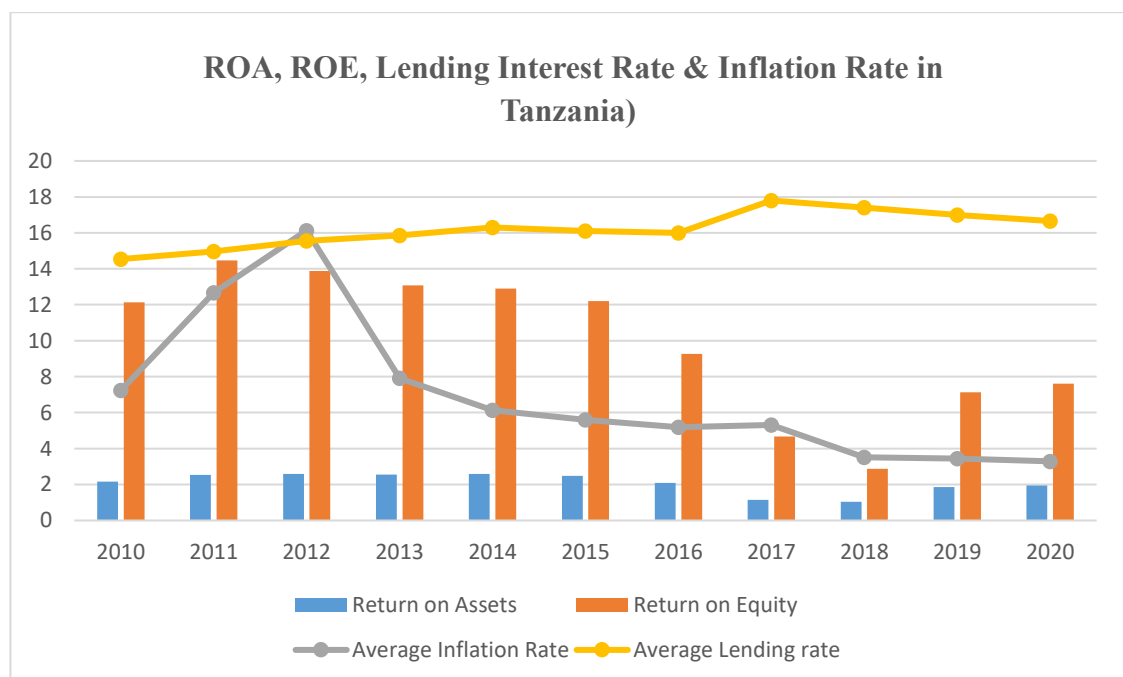
Source: Bank of Tanzania and World Bank (2020)

Table 1.1:   **Overall Banking Sector Performance (ROA and ROE) Vs. Macro Economic Indicators (Lending Interest Rate and Inflation Rate)**

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
	%	%	%	%	%	%	%	%	%	%	%
Return on Assets	2.16	2.53	2.58	2.55	2.58	2.49	2.09	1.15	1.04	1.86	1.94
Return on Equity	12.13	14.47	13.88	13.08	12.9	12.2	9.26	4.67	2.88	7.13	7.61
Average Inflation Rate	7.23	12.67	16.13	7.91	6.14	5.59	5.18	5.32	3.51	3.45	3.29
Average Lending rate	14.54	14.96	15.56	15.86	16.3	16.1	16	17.8	17.41	17	16.66

Source: Bank of Tanzania and World Bank (2020)

1.1.8   Status of the Tanzania Banking Sector as of 31st December 2020

According to the BOT- Financial Sector Supervision Annual Reports (2020), there were 46 banking institutions by the end of 2020. Since the inception of the Treasury Single Account (TSA) system, the sector witnessed a drop in the number of banks from 53 recorded in 2018 to 46 in 2020 due to the 2018 mergers, acquisitions, and takeovers of three state-owned banks (Tanzania Postal Bank, Tanzania Women's Bank and Twiga Bancorp), followed by the failure of five banks (Covenant Bank for Women Limited, Kagera Farmers' Cooperative Bank Limited, Meru Community Bank Limited, Efatha Bank Limited, and Njombe Community Bank Limited) whose banking licenses were confiscated by the Central Bank of Tanzania (BOT) as a result of persisting liquidity problem and undercapitalization. Consequently, the 2020 Annual Financial Sector Supervision Report shows that by the end of 2020, there were thirty-five (35) commercial banks, two (2) development banks, four (4) microfinance banks, and five (5) community banks. The present study, therefore, used a panel data set of 30 banks out of 46 institutions that were in existence from 2010Q1 to 2020Q4.

Out of these 46 banking institutions, foreign banks dominated the sector, accounting for 27 institutions, which is more than half of all banks. The remaining 19 institutions represented domestically owned banks. Ten (10) banks, i.e. (22%), were categorized as large banks proxied by total assets held, whereas the rest, 36 (79%), represented small and medium banks, including community and microfinance banks.

In light of the preceding, the need to conduct a study on the performance of Tanzania's banking sector is crucial to provide long-term solutions for the nation's overall economic well-being. The justification for this study is even more relevant given the sector's sensitivity and dominance within the nation's financial system. Moreover, the introduction of the Treasury Single Account system makes it even more paramount to carry out the study to gauge its impact on the sector's performance.

1.2   Problem Statement

Limited empirical evidence exists for studies assessing factors influencing bank performance in developing countries. Most of the empirical studies (Barros et al., 2021; Chen et al., 2021; Fotova et al.,2023; Huang, 2022; Haider et al., 2018; Lopez et al., 2022; Narwal & Pathneja, 2016; O'Connell, 2023; Phung & Mishra, 2016; Robin et al., 2018; Sufian &Chong, 2008; Yuan et al. (2022) are more inclined in developed countries, making it difficult to have a generalized conclusion about the overall image of bank performance globally (Mkaro 2011). Similar arguments were asserted by Aminiel (2013) that much literature discusses bank performance in developed countries, such as building a gap of literature in nations with developing economies such as Tanzania.

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The Tanzania banking sector has been undergoing several reforms that have contributed to the sector's development (Kishimba et al., 2022). The industry is also vulnerable to the impact of numerous changes in government policies which may have a direct or indirect implication on the performance of the Tanzanian banking sector. The introduction of the Treasury Single Account system (TSA) in Tanzania came with numerous feelings from various economic analysts in the country. Banks' liquidity, profitability, and future lending were expected to drop since the inception of the TSA system (Citizens, 2016; World Bank, 2017); significant impairment of bank performance was expected after the Government had withdrawn and transferred its deposits from commercial banks to BOT.

The IMF report on the Tanzania banking sector performance publicized that almost half of all banking institutions in Tanzania are CAMELS-rated three, meaning that these banks have recorded marginal performance (IMF, 2018). This shows a dangerous signal as banks are subject to poor performance in case of any calamity that might arise in the industry. It should also be appreciated that industry and country factors such as a rise in interest rates, exchange rate volatility, and a decline in the gross domestic product may stimulate a high risk of impairment of banks' profitability and Equity altogether. Since the model's inception in 2016, there have been very few studies that have attempted to study TSA's impact on bank performance. While the International Monetary Fund (IMF) report highlighted banks' susceptibility to declining performance (IMF, 2018), empirical data suggested that TSA had a detrimental impact on the financial performance of the banking sectors in Tanzania (Mwambuli & Igoti, 2021; Silim & Pastory, 2022) and Nigeria (Ezinando, 2020; Muraina, 2018; Ogunniyi

et al. 2023; Onodi et al. 2020). Nevertheless, none of these studies attempted to investigate how TSA moderates the effects of ownership concentration and bank size on bank performance.

The literature review reveals several variables influencing banks' performance. Ownership concentration, industry-specific characteristics, bank-specific characteristics, and macroeconomic variables are the bank performance determinants that have been identified by studies conducted by Abdilahi and Davis (2022), Isayas (2022), O'Connell (2023), Pham et al. (2021) and Yuan et al. (2022). Although the impact of the variables above on bank performance is well understood, the potential impact of the Treasury Single Account on this connection has not been considered in the literature up to this point. To address this gap, this study evaluates the moderating impact of TSA on the link between ownership concentration, bank size, macroeconomic indicators, and the performance of Tanzania's banking industry.

In the same vein, it should be appreciated that few studies have attempted to analyze TSA's impact on bank performance worldwide and in an African context. Moreover, even those studies that have been carried out thus far (Ezinando, 2020; Muraina, 2018; Ogunniyi et al., 2023; Onodi et al., 2020;) are mainly inclined toward Nigeria's banking sector as the same was the first country in Africa to embark on a wholesale adoption of TSA in 2015 (Ndukuabu et al., 2018). To date, there are limited studies in the Tanzanian context (Mwambuli & Igoti, 2021; Silim & Pastory, 2022), thus calling for a need to carry out the present study. Generally, the TSA's move emerged as a result of the world revolution, as many countries have been striving to improve their

government accounting system to control government receipts and payments. In light of the preceding, developing countries are also encouraged to follow suit, which is why Nigeria has embarked on the same (Echekoba et al., 2020; 2021; Ndukuabu et al., 2018 & Ogungbade et al., 2021). Many developing countries have inadequate accounting systems for controlling government cash receipts and payments due to the absence of a consolidated accounting system to monitor government cash resources. Therefore, the practice has resulted in large amounts of idle government money being deposited in commercial banks. At the same time, the Government is required to borrow to finance its budget, calling for the need to adopt the TSA system. Given those mentioned above, carrying out a study on the Tanzanian banking sector's performance following TSA adoption warrants merit given the system's significant implication in the banking sector's performance.

Furthermore, empirical evidence demonstrates that the limited number of studies that have sought to assess the effect of TSA on bank performance has generalized its impact on the overall banking sector's performance without particularizing its effects in association with bank-specific characteristics (bank risks and bank size) and ownership structure (private versus state-owned banks, and foreign versus domestic banks). Furthermore, there is limited literature on the application of the CAMELS[2] rating system (as a performance indicator) in association with TSA in those studies, thus failing to have a generalized picture of the TSA's impact on the sector's

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2 CAMELS is an acronym for C=Capital Adequacy, A=Asset quality, M=Management capability, E=Earnings, L=Liquidity, Sensitivity to Market Risk

performance. Many related empirical studies have only applied a few profitability and liquidity ratios as performance criteria. A good example of the arguments discussed above can be drawn from recent studies on TSA's implication on the bank performance in Tanzania (Mwambuli & Igoti, 2021; Silim & Pastory, 2022) and in Nigeria (Ezinando, 2020; Chukwudi et al., 2018; Kanu, 2016; Ndukuabu et al., 2018; Ogunniyi et al. 2023; & Onodi et al. 2020).

As highlighted above, empirical studies evidence that limited studies have attempted to adopt the CAMELS rating system in analyzing bank performance, regardless of its worldwide applicability by regulatory authorities to measure the financial soundness of banking institutions. According to Roman and Şargu (2013), the CAMELS rating system was first developed by USA regulatory agencies in 1979 to measure the financial soundness of financial institutions. Since its inception, regulatory agencies worldwide have been using the CAMELS model, and the same is still applicable to date. In light of the preceding, the current study deemed it beneficial to acquaint scholars and professionals with the CAMELS rating system to promote its use for analyzing bank performance.

Furthermore, several empirical studies on bank performance point to profitability and liquidity positions as the primary performance indicators, suggesting a plausible gap in the literature on management performance. As a result, the current study's inclusion of management performance constitutes a significant contribution to the body of knowledge. It is for these reasons that, this study was carried out to coverer the above highlighted gaps.

1.3   Research Questions

The following research questions guided this study to achieve the intended research objectives.

a) Does the influence of ownership concentration[3] impact Tanzanian banking sector performance before and after the Treasury Single Account (TSA) adoption?

b) Does the influence of bank-specific characteristics[4] impact Tanzanian banking sector performance before and after Treasury Single Account (TSA) adoption?

c) Does the influence of industry and countrywide variables impact Tanzanian banking sector performance before and after the Treasury Single Account (TSA) adoption?

1.4   Research Objectives

The main objective of this research is to examine the influence of ownership concentration, bank-specific characteristics, as well as industry and country variables on the Tanzanian banking sector performance,[5] before and after the adoption of the Treasury Single Account (TSA). Notably, this study intends;

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3 Ownership concentration is defined in terms of (i) domestic vs foreign banks (ii) private vs state-owned banks

4 The present study defines, bank specific characteristics in relation with (i) bank size (large vs small), and bank risk (liquidity and credit risk)

5In this study, bank performance will be measured using three variables namely (1)Composite CAMELS rating, (2) Financial performance (ROE, ROA and NIM)and (3) Management performance i.e. cost to income ratio

a) To examine whether the influence of ownership concentration has a significant impact on bank performance before and after TSA adoption;

b) To examine whether the influence of banks' specific characteristics has a significant impact on bank performance before and after TSA adoption;

c) To examine whether the influence of industry and countrywide variables significantly impacts bank performance before and after TSA adoption.

1.5   Significance of the Study

This study covered all banking institutions that existed in the United Republic of Tanzania from the year 2010 to the year 2020 with the view of measuring bank performance in Tanzania. In light of the preceding, different stakeholders will benefit from the findings of this study as follows;

1.5.1   To Academicians

A review of previous works of the literature reveals that significant studies focus on bank performance in developed countries. There is a literature tear on banking institutions' performance, especially in nascent economies like Tanzania. Given the foregoing, this study will help to enhance the theoretical and empirical insight into bank performance in Tanzania and thus stimulate discussion for further studies on bank performance in Tanzania. Moreover, to make this study useful, bank performance was discussed in various classifications, such as local banks, foreign banks, privately owned banks, state-owned banks, large banks, and small and medium banks. As a

result, the findings of the present study provide a deeper understanding of the banking sector.

Moreover, using the CAMELS rating system has raised awareness of the methodological part of research related to bank performance. Many studies on bank performance have been using traditional indicators such as ROA and ROE to evaluate banks' performance. In this regard, the application of the CAMELS rating system familiarises researchers with an understanding of the model. It is imperative to appreciate that the CAMELS rating is a system that is the model many central banks in the world apply for measuring banking performance in all the essential aspects of performance indicators. Thus, the model is considered the most robust and effective tool for measuring bank performance. In light of the foregoing, this study intends to address the knowledge gap, thus stimulating other researchers to adopt the model.

In addition, the study enhances the theoretical understanding of the operations of the Treasury Single Account system since the system is relatively new to most African countries. Past studies show that only two African countries have embarked on a wholesale adoption of TSA. Empirical studies reveal that Nigeria launched a wholesale adoption of TSA in 2015 (Ndukuabu et al., 2018), followed by Tanzania in 2016. (The Citizen, 2016)

1.5.2 To Policymakers

Findings from this study are paramount to regulatory authorities, banks' senior managers, board members, and the Government to establish future strategies and

robust policies to improve bank performance in the country. Regulatory authorities can establish the basis for future regulations to strengthen the supervisory and regulatory framework, such as promoting the financial sector's soundness. Moreover, the banking sector's stakeholders can make an informed decision based on the findings of this study.

1.5.3   To Banks' Management

As the CAMELS rating system is one of the critical tools in rating commercial banks' performance, it is fertile for commercial banks' management to familiarise themselves with the model for them to perform their internal assessment with the view of rectifying any anomaly well in advance, rather than waiting for the central bank's assessment. It should be appreciated that, for the time being, this model is being used by the central bank to assess the performance of the banking sector in Tanzania. The model gives an early warning signal to prompt the central bank to take regulatory actions on those banks that have shown a deteriorating position.   In this regard, if commercial banks are familiarised with the CAMELS rating system, they can address their weaknesses in advance, thus promoting their financial soundness.

1.6   Organization of the Report

The background information and the Tanzanian banking sector evolution have been introduced in chapter one. Various reforms since the inception of the banking sector, from the colonial era to the latest reform, have been discussed. The statement of the research problem, research questions, general and specific objectives of the study, and significance of the study to particular groups such as academicians, bank management,

and policymakers are discussed in the same chapter. Chapter two of this study reviewed theoretical and empirical evidence on bank performance concerning ownership concentration, industry and country factors, and bank-specific characteristics. Treasury single account and its impact on bank performance have also been discussed. Chapter three discusses the overall research methodology concerning the present study. The nature of the study, type, and data source are discussed in detail. Furthermore, econometric tools and estimators for the fixed, random, and Hausman tests are developed and discussed. Numerous econometric tests, such as VIF, cointegration tests, and correlation tests, are discussed as well. Moreover, the CAMELS rating benchmarks and the CAMELS rating system incorporating all the CAMELS indicators for measuring and analyzing bank performance are well discussed. Chapter four discusses the findings of the research whereby regression results and the results of financial statements analysis are well discussed. Chapter five summarizes the overall results of this research.

CHAPTER TWO

LITERATURE REVIEW

2.1   Introduction

This chapter discusses the theoretical framework and empirical studies on the influence of bank characteristics and industry-specific and countrywide variables on the performance of the banking sector in Tanzania before and after TSA adoption. The chapter is arranged into six sections. The introductory part is presented under the current section 2.2 and discusses the modeling framework for this study. As such, the agency theory, Stakeholders' theory, efficiency theory, and institutional theory are discussed. Section 2.3 presents an overview of relevant past studies. In comparison, the methodology for the past studies and the chapter summary are discussed in sections 2.4 and 2.5, respectively.

2.2   Relevant Theories for this study

This study was guided by four theories, namely, the agency theory, the institutional theory, the efficiency theory, and the stakeholders' theory. The theories directly link the variables that this study used. In conjunction with suggestions by previous scholars, the agency theory was integrated with the institutional theory and the efficiency theory to give relevance to the Tanzanian economic environment. This is because many studies have criticized the agency theory as it fails to draw its direct link in emerging markets such as Tanzania (Bilal 2018; Melyoki, 2005; Porta et al., 2000a; Rwegasira, 2000).

2.2.1 Integrating the Agency Theory, Institutional Theory, Efficiency Theory and the Stakeholders Theory

A Large number of scholars on corporate governance have applied the agency theory in an attempt to explain the link between ownership and corporate performance. It should, however, be appreciated that the agency theory may have limited application to emerging economies, including East African countries. This is because corporate control has no adequate markets, and the legal and regulatory environment is not very strong compared to developed countries. Given the foregoing, the relationship between corporate performance and ownership is somehow impaired in emerging economies (Bilal 2018; Melyoki, 2005; Porta et al., 2000a; Rwegasira, 2000). In addition, Rwegasira (2000), Young et al. (2002), and Young, Peng, Ahlstrom, Bruton, and Jiang (2008) asserted that, due to the low immersion capacity of emerging economies' stock markets, the agency theory has a limited application in these emerging economies including EAC. For that reason, they argue that the generalized application of the agency theory is still debatable. Bilali (2018) combined the agency and resource dependency theories to study the impact of ownership concentration and corporate performance in EAC.

The results revealed a negative relationship between corporate performance and ownership concentration as majority shareholders take advantage of deploying the company's assets for the expense of non-controlling interest, such as violating the principles of good corporate governance.

Given the foregoing, and in conjunction with Rwegasira's (2000) and Young et al. (2002) views of integrating the agency theory with other theories when attempting to study ownership structure and corporate performance in developing economies, the present study combines the agency theory with the institutional theory, efficiency theory, and stakeholders' theory to realize the foreseen advantages that can be sought from these combinations. It should be appreciated that this study discussed different types of banks' ownership structures. As such, the variety of theories was fertile with the views of contributing to the body of knowledge.

Integration of the agency and institutional theory explained the relationship between ownership structure and institutional behavior and their impact on bank performance. As such, the comparison between foreign and domestic banks and private and state-owned banks, as well as risk-taking behavior, was explained in connection with bank performance using the aforementioned integrated theories. On the other hand, efficiency and agency theories were integrated to explain the relationship between large banks versus small and medium banks. Lastly, the stakeholders' theory was used to describe the moderating variable, i.e., TSA, to enable the comparison of bank performance before and after TSA adoption in Tanzania.

2.2.2   An Overview of the Agency Theory

The agency theory can be traced back to finance and economic studies. This theory was first invented by Stephen Ross and Barry Mitnick in 1973. This theory thoroughly describes the link between the principal and the agent, emphasizing a clear line of separation between control and ownership. The company owners, regarded as

principals, hire the agent, i.e., management, to take charge of the overall control of the business's operations. The theory is grounded on the premise that the agent of a firm should work and execute all necessary duties on behalf of the owner (principal) to maximize the shareholders' wealth. It should, however, be appreciated those agency problems could bring about agency costs. It is worth bearing in mind such issues (Fama and Jensen, 1983; Jensen and Meckling, 1976; Scott, 1998; Slyke,2006). The reason for two independent positions between the CEO and the chairperson emerged to clear out the deviation of interest between the principal and the agent, thus calling for a transparent ownership structure (Jensen & Meckling 1976). It is also argued in the theory that one group of persons cannot carefully handle another person's resources (Jensen & Meckling, 1976). Studies by Scott (2003) and Yermack (1996) point out that separation of control between the CEO and the chairperson is highly encouraged to promote efficiency. On top of that, Fich (2005), as well as Jensen and Meckling (1976), opine that the existence of autonomous directors, who are not executive officers, should be emphasized for sustainable efficiency of the corporate body. The principal-agent, i.e., owner-manager relationship, can be summarized in Figure 2.1 as posited by Slyke (2006) below.

Figure 2. 1: Principal-Agent Relationship
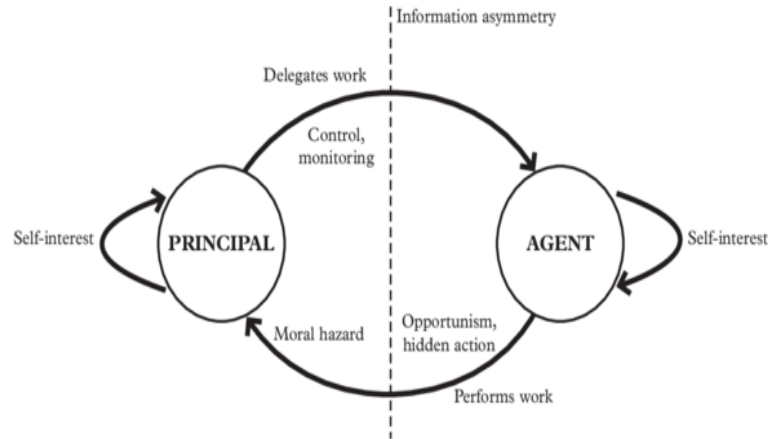
Source: Slyke (2006)

2.2.3 The Agency Theory and Bank Performance

Ozili and Uadiale (2017) linked the agency theory and bank performance to investigate the influence of ownership on banks' profitability in emerging countries. Shareholding was used as a proxy for ownership concentration, and as such, three categories of ownership were analyzed: high, moderate, and dispersed ownership concentration. The results revealed that attractive performance was recorded in banks whose ownership structure is highly concentrated, as ROA, NIM, and earning power were high compared to banks with dispersed and moderate ownership. As far as moderate ownership is concerned, banks under this category recorded high-cost efficiency, which improved ROE. In contrast, banks with dispersed ownership recorded lower ROA, regardless of the high return on Equity.

Ghosh (2018) investigated the influence of various reforms in the governance structure and their effect on the overall performance of banking institutions around the MENA region. The result found that Islamic-owned banks may deter bank profitability if the focus on Islamic governance is emphasized. It should also be appreciated that it is common in many countries to find state-owned banks, including those with partial state ownership. Past studies in various countries reveal that government-owned banks record deteriorating performance (Barth et al., 2004; Iannotta et al., 2007; and La Porta et al., 1998). Concerning Islamic banks, the study by Zouari and Taktak (2012) found that the Government owns most Islamic banks and or family such as, making the ownership structure more concentrated, such as disclosure requirements, that show the predominance role of the Government recorded lower profitability in these banks. The results also generally concluded that reforms that stress risk disclosures and the independence of the board play a vital role in a bank's behavior, profitability, and overall stability of these Islamic banks. It has also been revealed that banks whose interest expenses are low and whose capital channels are accessible have recorded an attractive profit.

On the other hand, the stability of banks also depends on the set standards for regulatory purposes. However, different countries may record different results due to the diverse banking structures in each country. Given the preceding, it is highly encouraged to tailor make the disclosure requirements taking into the composition and the design of the banking sector.

It should be appreciated that several scholars have studied key firms' governance structure differences in various countries. The study by Shleifer and Vishny (1997) came up with a detailed review of corporate governance in both theoretical and empirical. In applying the agency theory to study corporate governance practices, it was revealed by the researcher that agents put less concern on maximizing the wealth of the principal, such as jeopardizing shareholders' wealth. Regarding the agency theory, there should be a clear separation between a firm's ownership and control. The results revealed that the agent do not exercise their role effectively. According to past studies, several ways have been discussed in how the theory is abused, ranging from executives taking advantage of insider information (Chalevaas, 2011; Jensen, 1993; Meckling Jensen, 1976), in the same vein, executives can favor themselves with attractive remuneration such as high salary pay and lucrative bonuses (Bebchuk et al., 2002; Shleifer and Vishny, 1997). In light of the preceding, shareholders are highly encouraged to minimize agency costs by applying an effective governance structure. Things like practical disclosure requirements to check the agent's conduct are highly encouraged for the effectiveness of corporate governance (Fama et al., 1983; Siddiqui et al., 2013). In conjunction with the foregoing, managers are also expected to ensure that shareholders' wealth is maximized to the desired levels.

To research how corporate governance affects the performance of enterprises in GCC nations, Pillai et al. (2017) analyzed panel data from 349 firms from 2005 to 2012. Results of this investigation showed that elements of corporate governance, including state- shareholdings, size of the board, type of audit, leverage, and corporate social

responsibility, have a significant impression on the institutions' performance in almost all GCC states.

On the other hand, Konaraa et al. (2019) combined the agency and efficiency theories in their study, which applied DEA to study the bank efficiency of nine countries, namely Columbia, Hungary, Indonesia, Malaysia, Poland, Russia Federation, South Africa, and Turkey. The study used panel data from 1999 to 2013 and found that foreign-owned banks are advantageous in terms of technical and scale efficiency. However, foreign banks were found to be less efficient in terms of revenue efficiency, cost efficiency, and pure technical efficiency. In the same vein, Peter et al. (2019) used time series data to assess MENA countries' bank efficiency for nine years, i.e., from 2006 to 2014. They found that a bank's origin, type of bank, and structure of ownership have an association with banking efficiency, with respect to balance sheet, financial health, and profit sheet indicators, nevertheless barriers such as regulatory and cultural existence in each country.

2.2.4 An Overview of the Institutional Theory

The institutional theory describes the social networks in a deeper and much more resilient social aspect. Powell and Dimaggio (1983) incepted the theory that stipulates that structures such as rules, schemes, routines, and norms play a significant role in influencing social behavior and, as such, the same forms of guidelines that become authoritative in as far as social behavior is concerned. Several components of this theory explain how the creation, diffusion, and adoption of these components are adapted over time and how they might fall into the stage of decline.

According to William Scott (1995), institutions are viewed as social structures with high levels of suppleness. The composition of normative, cultural, cognitive, and regulatory components, along with allied activities and related resources, form steadiness and significance to sociological life. Numerous vessels, such as routines, relational and symbolic systems, and artifacts, are among the significant elements that can transmit institutions. It should also be appreciated that institutions operate at diverse forms of jurisdictional levels ranging from the world to local relationships. Despite their relative stability, they could alter gradually or in various ways (Heo & Tan 2003).

Scott (2008) asserts that institutional theory is "a worldwide recognized posture emphasizing coherent traditions, isomorphism, and authenticity. Several researchers who build on this viewpoint of institutional theory accentuate that a fundamental intuition of this theory is imitation but not necessarily augmenting their decisions, conducts, and structures and that organizations peer themselves with similar organizations for hints to appropriate behavior. Kraft's Public Policy (2007) emphasizes that the theory of Institution lies in Policy-making that stresses both legal and the proper facets of the structures of the governments. Figure 2.2 summarizes the institutional theory as posited by Heo and Tan (2003).

Figure 2. 2: Institutional Theory
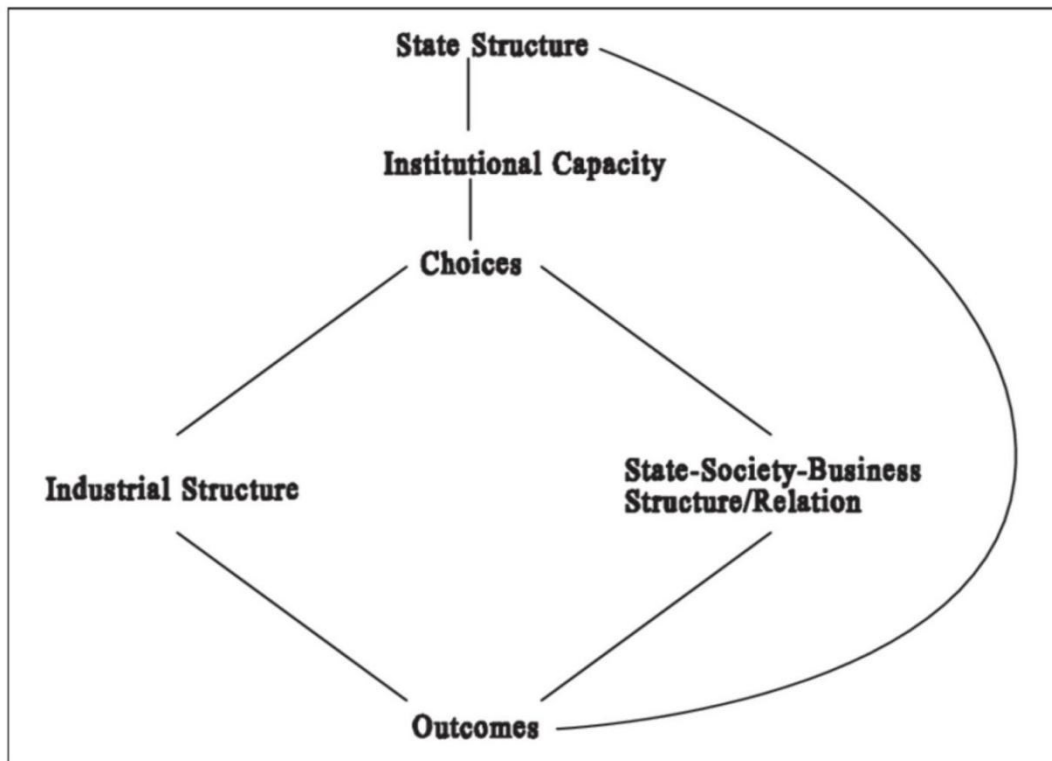
Source: Heo and Tan (2003)

2.2.5 The Institutional Theory, Agency Theory, and Bank Performance

The study by Aljughaiman and Salama (2019) integrated the agency and the institutional theory to study the role of risk governance in managing banks' risks. The study has contributed to the literature as few studies have attempted to investigate the relationship between risk-taking behavior and risk governance. It was drawn from a sample of five hundred seventy-three (573) observations that were removed from sixty-five (65) banks (representing twenty-eight (28) Conventional banks and thirty-seven (37) Islamic banks in MENA countries for the period of ten years, i.e., 2005 to 2015. Indicators of risk governance and the overall risk perspective for all banks (both conventional and Islamic banks) during the period after the crisis were shown to be negatively correlated.

It was revealed that before the recent revisions of the principle of governance in the region, Islamic banks were taking a higher risk during the period before the crisis as they were leveraging on the risk governance systems already in place for Islamic banks. In light of the preceding, Islamic banks appear to be positively responsive to the post-crisis regulatory reviews and reforms as it is easier for them to adjust to the changes as the system is already in place. It was also found that it is not the Chief Risk Officer who determines the risk level. Rather, it solely stems from the board-level risk committee, and conventional banks' performance largely depends on the strength of the risk committee. The results were, however contrary to Islamic allied banking institutions, as the risk committee's role in the effectiveness of these banks is not vital.

Another study by Victoria et al. (2018) proposed a modern approach to researching the relationship or the influence of the independence of the board and the overall performance of corporations by using technical efficiency whereby institutional factors (legal and judicial protection) were used as moderating variables. A sample of 2185 international firms from 2006 to 2015 was used with the application of regression models on panel data in conjunction with DEA to examine corporate performance using efficiency as a proxy for corporate performance. It was found that there is a positive relationship between board independence and the firms' technical efficiency. In conjunction with the moderating variable, it was also observed that firms operating in countries with strict laws and enforcement have their boards exert greater independence, hence posing a positive outcome on efficiency.

Pillai et al. (2017) assessed the performance of corporate firms concerning corporate governance structure for the GCC countries. Regulators such as the capital markets and security authorities, central banks, a community of business associations, etc., significantly recognize good corporate governance as it results in improved corporate performance. Using a set of listed non-financial and financial firms in a panel of assorted data from the year 2005 to the year 2012, it was found that there is a link between effective corporate governance and the performance of businesses. Therefore, the researchers concluded that corporate governance variables such as state ownership or government shareholdings, leverage level, size of the board, nature and type of audit, and corporate social responsibility directly impact the performance of firms in most of the GCC countries. The researchers asserted that findings from this research imply regulators and managers of the institutions strive to enhance good governance resolutions in a very strategic approach with the view of protecting and progressing GCC businesses in the future.

Mertzani et al. (2018) examined MENA region firms' performance concerning corporate governance and the social and institutional factors. The regression model results show that the measurement scale is used to explain the relationship between the governance structure and the performance of firms. Data from 225 stock exchange-listed companies in eleven (11) MENA countries were used to examine the existing relationship using the data for ten years from 2007 to 2017. These results are consistent with the study conducted by Aljughaiman and Salama (2019), Pillai et al. (2017), and Victoria et al. (2018). However, the study results caution that, depending on the measurement criteria used for the study, it is imperative to identify whether the firms'

specific governance structure or the ownership structure or characteristics are operated as independent variables to gauge their impact on firms' performance. In this case, the above results are not conclusive. The researchers also assert that countries have different economic and non-economic factors, which may result in additional findings regarding how social institutional, and governance structures may affect firms' performance. In addition, regulatory performance measurement criteria may also bring about conflicting results. MENA countries have distinctive social and religious features that may cause inconsistency in the above findings if the independent variables are changed. Conclusively, the researchers believe that the justifying impact of social factors and corporate governance in institutions largely depends on the variables used as performance measurement criteria.

2.2.6 An Overview of the Efficiency Theory

The theory of efficiency was founded by Demsetz (1973). The approach stresses that economies of scale are central to achieving the most attractive production. In the short run, the maximum operational efficiency is attained at the output level, where there is efficient employment of all the available economies of scale (Odunga et al., 2013). Furthermore, the theory stipulates that higher market shares and sound performance result from efficiency, bringing about a higher profit margin (Mirzaei, 2012). Efficiency Structure Theory further advocates that those banks that are more efficient can make an attractive profit than the less efficient banks. On top of that, the theory amplifies that small banks make less profit than large banks because small banks have a less fine management structure and low technological advancement, such as having high operational costs compared to large banks (Soana, 2011). The inefficiency

hypothesis will not prevail when there is a significant negative correlation between market share and profitability (Mensi and Zouari, 2010).

2.2.7 Efficiency Theory and Bank Performance

Wanke et al. (2019) used Dynamic Network Data Envelopment Analysis (DEA) to study banking efficiency in the MENA region. The findings revealed that the level of efficiency with respect to earnings, financial position, and financial soundness indicators depend upon various characteristics such as the type of banking institutions, the origin, and bank ownership structure; however, there are some barriers, such as cultural differences and regulatory factors that may drive the result in a contrary direction. Fernandes et al. (2018) assessed the efficiency of domestic banks in the exterior part of Europe using Data Envelopment Analysis and regression analysis. Bank performance was also examined in light of the banks' risks for seven years from 2007 to 2014. The findings of this research were consistent with Wanke et al. (2019), however, with an extended version tailored for peripheral banks. The results, therefore, pave the way for policymakers as they show the importance of recognizing how peripheral banks operate and how they can enhance or maintain their efficiency levels. Bank productivity was negatively affected by both credit risk and liquidity risk, while risks associated with capital and profit were found to affect banks' performance positively. It was during the period of crisis when the effects above were observed; however, when the levels of financial development are low, banks' efficiency is highly affected by banks' risk indicators.

On the other hand, Belousava et al. (2019) combined two methodologies to examine cost efficiency and profit efficiency concerning bank ownership in Russia. As pointed out above, the stochastic frontier analysis (SFA) and an intermediary approach were combined to evaluate profit and cost efficiency. This study's results are consistent with Wanke et al. (2019) and Fernandes et al. (2018), as they all support the findings that ownership and efficiency have a strong relationship. Belousava et al. (2019) found that state-owned banks are less profit-efficient than foreign-owned banks, while state-owned banks are more cost-efficient than other banks. The researchers also revealed that the above results are largely inclined to the level of specialization and risk preference.

The study by Panagiotis et al. (2018) came up with divergent results about bank size and efficiency. Numerous studies have revealed the presence of lower economies of scale for small banks compared to large banks. In their research, they focused on the disadvantageous side of the bank's size in terms of cost management and monitoring. The results show an inverse relationship between the size of a bank and its market value to assets book value, such as making a U-shape kind of relationship. The preceding findings reveal that the cost of monitoring those banks offsets large banks' advantages due to economies of scale. This is attributed mainly to the fact that large banks will need to delegate some roles to managers to help the owners and senior management run the business and close up with borrowers. In turn, monitoring costs can outweigh large banks' benefits from economies of scale. In the same vein, Mokhamad (2018) used time series data to study Indonesian bank efficiency from the year 2002 to 2010 and found that bank size, capital adequacy, profitability, credit risk

management, and loans to deposit are the internal variables impacting Indonesian banks cost efficiency whereas, all the macroeconomic variables have recorded a significant association in affecting Indonesian bank cost efficiency.

Seyed et al. (2019) used a non-parametric method to study the USA's large commercial banks' efficiency before and after the global financial crisis of 2008. This study shows the importance placed on the large banks' efficiency. The researcher found that the risk-taking attitude and the structures of the portfolio of USA large banks have changed after the crisis. Efficiency measures are allocative efficiency, scale efficiency, pure technical, and overall technical efficiency. Large USA banks had recorded a decline in efficiency level during the crisis, and ever since the situation occurred, the banks' efficiency has not recovered to the level before the crisis.

2.2.8 An Overview of the Stakeholders' Theory

This theory is adapted from organizational behavior and sociology scholars and is grounded on satisfying all masters concurrently (Gillan, 2006). Freeman (1994) originally founded this theory, asserting that shareholders are not the only concerned party in the company. The theory, therefore, emphasizes the involvement of every person who might affect or be affected by the company (Donaldson & Preston, 1995). For that reason, employees, vendors, government agencies, environmentalists who have a direct link to the company's plants, etc., should all be considered the company's stakeholders because the satisfaction of all of the stakeholders, as mentioned above, is what brings success to the company. According to Aduda et al. (2013), the theory opines that any business organization's operations can either affect or get affected by

diverse individuals. As such, multiple individuals are incorporated. The theory is summarised in Figure 2.3.

Figure 2. 3: Stakeholders Theory
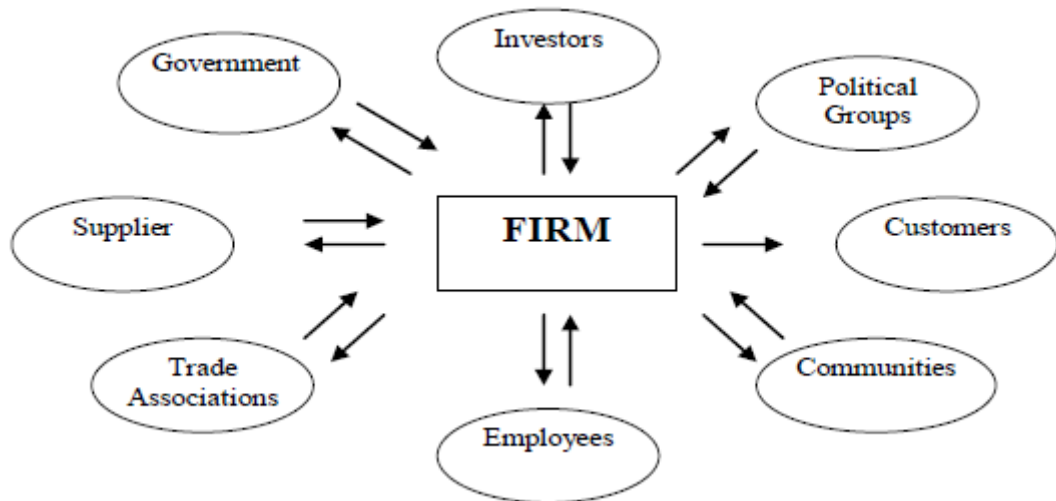
Source: Donaldson and Preston (1995).

2.2.9 Stakeholders' Theory and Bank Performance

Olaoye and Talabi (2019) analyzed the financial performance of the Nigerian Deposit Money Bank (DMB) before and after TSA adoption. The study revealed that all the profitability indicators except Tax Profit had an insignificant positive impact after adopting TSA. It was, however, revealed that an after-tax tax profit recorded an insignificant negative impact contrary to other profitability indicators. Given the preceding, the study concluded that TSA adoption had not affected Deposit Money Banks' profitability except on only one indicator, i.e., After-Tax Profit, which has recorded a negative immaterial impact. This is because banks had to turn back to their primary purpose of mobilizing deposits from the public, safekeeping them, and

absorbing them in the financial intermediation process to earn a profit, which in turn enables the banks to boost the economy through jobs and wealth creation.

Oyedebe et al. (2018) studied banking sector performance with the Treasury Single Account (TSA) model. The results were contrary to the study by Olaoye and Talabi (2019), as the survey by Oyedebe et al. (2018) found that the introduction of the Treasury Single Account Model (TSA) system had a negative impact on banks' liquidity positions, due to challenges in deposit collection, and the saving attitude. Ultimately, these have impacted employment, and Nigeria's overall banking sector performance was negatively affected. It should, however, be appreciated that Oyedebe et al. (2018) focused on liquidity position while Olaoye and Talabi (2019) centered on profitability. TSA policy was adopted to control public funds through a robust unified system of centralizing the Government's cash resources to limit fund embezzlement and promote a high level of transparency as far as public funds are concerned. As such, the withdrawal of public funds from deposit money banks to the central bank affected the banks' liquidity. Given the foregoing, among the suggested measures to help the banks turn around was to encourage banks to refocus on the central operation of deposit mobilization instead of leveraging on the Government's deposit.

Moreover, public awareness about banking should be enhanced at large. Most African citizens have a culture of keeping their money at home instead of depositing it with banks. As such, banks can use this avenue to mobilize deposits from the public by sensitizing the public to build a banking culture.

Andornimye (2017) used regression analysis to study the impact of TSA adoption on Nigerian banks' liquidity position. The results were consistent with the study conducted by Oyedebe et al. (2018), as the results show that TSA has negatively affected Nigerian banks' liquidity positions. This has been evidenced by deteriorating current ratios; the working capital reduction has been primarily observed. The fall of some existing liquid assets, such as treasury bills and the like, has affected the structure of the banks' current ratio at large, and ultimately, the overall liquidity position of banks is threatened. On the other hand, it has been observed that TSA adoption has positively impacted the deposit mobilization role. Banks have been forced to concentrate on the core role of deposit mobilization by implementing appropriate strategies to sensitize and collect the deposit from the general public rather than depending on the public fund. However, regardless of the adverse impact on the bank's liquidity position, it has been observed that TSA has little or weak effect on the banks' lending or credit creation ability. Furthermore, the study by Lucy Andornimye (2017) found that Nigerian banks' working capital has declined significantly, impairing banks' ability to meet short-term maturing obligations. TSA has, on the other hand, encouraged bank deposit mobilization, but the same has little effect on banks' credit creation.

2.3 Overview of Relevant Past Studies

Many studies on bank performance have been carried out with a high focus and attention on developed countries. Little research has been done in developing countries (Apergis, 2016; Aminiel, 2013; Mkaro, 2011 & Mokni, 2014). In light of the preceding, there is a solid reason to carry out similar studies in African countries,

particularly in Tanzania. Furthermore, TSA sounds like a very new adoption in African countries. As such, there is very little literature on the impact of TSA on bank performance (Andornimye, 2017). In light of the foregoing, and because Tanzania adopted TSA in early 2016, this study adds to the corpus of knowledge regarding the effect of TSA on banking sector performance in Tanzania.

This part is arranged into six sections, of which the introductory part is presented under the current section. Section 2.4 discusses ownership concentration and bank performance, of which the performances of domestic versus foreign banks and that of private versus state-owned banks are discussed. Section 2.5 introduces a general overview of the influence of both bank-specific factors (internal factors) and macroeconomic variables (industry and country-wide variables or external factors) on bank performance. In contrast, section 2.6 discusses explicitly the stimulus of variables unique to banks that impact bank performance. In contrast, section 2.7 discusses explicitly the influence of industry and country-wide variables (macroeconomic variables) on bank performance. In the same vein, observations of the methodology used for the past studies and the chapter's summary are discussed in sections 2.8 and 2.9, respectively.

2.3.1 An Overview of Ownership Concentration and Bank Performance

Lea et al. (2019) used DEA to study the influence of financial liberalization, the type of bank ownership, and how it affects banking performance in transition economies. The study's findings showed that (1) state-owned banks recorded a superior performance than the rest of other bank ownership types; (2) Likewise, state-owned

banks that were later privatized had recorded remarkable bank efficiency, (3) Private banks that had moved or extended from rural to urban, decreased their banking efficiency systems; (4) Those banks whose minority shareholders were foreigners recorded a less significant influence on the efficiency of those banks; (5) An improved intermediary service was recorded on business group ownership, whereas the overall operating efficiency of the banking system deteriorated.

Shaban and James (2017) investigated Indonesian bank performance and risk exposure in response to changes in ownership using a sample of sixty (60) banks for eight years, i.e., from 2005 to 2012. State-owned banks were found to be highly exposed to risk and were less profitable than foreign banks and private banks. Investors in the domestic country tend to acquire high-performing banks. Banks acquired domestically are more inclined toward low efficiencies, such as promoting their acquisition. On the other hand, to lower the risk exposure, non-regional foreign banks opt to acquire cross-border banks, whereas the focus of regional foreign investors centers on performance.

Previous studies on the influence of ownership and performance have yielded diverse results (Haider et al., 2018; Narwal and Pathneja, 2016; Phung and Mishra, 2016; Robin et al., 2018; Sufian and Chong, 2008). Various theories originating from finance and economics suggest that the performance of firms depends mainly on the ownership structure; however, the only debatable thing is whether other ownership types are less preferred than private ownership (Cornett et al., 2009; Shaban and James, 2017; Shleifer, 1998). The type of ownership structure impacts the

performance of firms. Studies show less efficient bank performance has been recorded in state-owned banks than other kinds of banks. Earlier studies concluded that the inefficiency of state-owned banks occurs due to the failure of these banks to address public needs (Boycko and Shleifer, 1995; Dewenter and Malatesta, 2001). State-owned banks are characterized by corrupt practices and conflict of interest, such as impairing their efficiencies as they tend to fulfill politicians and management rather than fulfilling citizens' interests, who are the main stakeholders. An earlier study by Barth et al. (2001, 2004) and La Potra et al. (2002) concluded that performance impairment and lower growth potential exist in state-owned banks.

Cornett et al. (2009) came up with a consistent result, as earlier studies showed that state-owned firms recorded lower profits than other firms. The researcher substantiated that for the four years, i.e., the years 1997 to 2000, state-owned banks had recorded lower performance than private banks for all countries that were hit by the financial crisis that had taken place in Asia. However, there was a performance shift in those banks after the crisis. In the same vein, Robin et al. (2018) examined the performance of the Bangladeshi banking sector about the ownership structure. The findings of this research supported earlier studies that state-owned banks had recorded lower performance in almost all the profitability indicators such as the return on Shareholders' fund or equity (ROE), return on banks' assets (ROA) as well as Net Interest Margin (NIM). Moreover, Su and He (2012) conducted a similar study and found a consistent result similar to earlier studies.

A study by Doan et al. (2018) comparing the performance of foreign-owned state-owned and state-owned banks revealed that the latter is more likely to face inefficiency as far as income multiplicity is concerned due to unstable sources of income. The research carried out by Haider et al. (2018), comparing bank performance at an international level, found that the performance of state-owned banks was subject to the country's corruption and financial challenges. The research by Molyneux et al. (1992) comprehended that state-owned banks and their overall profitability levels were positively correlated. The results were contrary to previous studies, which reported a negative relationship between state ownership and the levels of bank performance.

Phung et al. (2016) assessed bank performance by comparing domestic or locally-owned and foreign-owned banks. The researchers revealed that foreign-owned banks had recorded a positive relationship with performance up to a certain level before starting to record a negative relationship. Tsegba and Herbert (2013) assessed the impact of diverse firms' ownership on performance and found a negative relationship between ownership and performance. On the contrary, Uwuigbe and Olusanmi (2012) found a positive influence of foreign and institutional ownership on the financial sector's performance.

In the same vein, Cornett et al. (2009) studied bank performance in an international context and found that privately owned banks are more profitable with reasonable core capital and low credit risk than state-owned banks (Sturm and Williams, 2004) in the study of bank performance in Australia, reported that foreign banks performance superseded domestic banks performance. Doan et al. (2018) assessed and revealed

diverse findings on foreign banks' influence on income. Those foreign banks in developing countries with divergent incomes had recorded better performance than other banks. However, the results were different in developed countries, as foreign banks were found to be less efficient. Pelletier (2018) studied the sub-Saharan African bank performance and found that domestic banks outperformed foreign-owned banks from emerging markets and globally operating banks. However, foreign-owned banks from the regional market were assessed to be at par with local banks.

The study by Pelletier (2018) that focused on advanced and emerging markets concurred with Yanikkaya et al. (2018) findings. The latter assessed the profitability of foreign-owned banks, Islamic vs conventional banks in Yemen with banks in the UK and those in GCC countries. The results found that foreign ownership has a positive and substantial association with performance as dignified by margins for non-Islamic banks, i.e., conventional banks. It should, however, be appreciated that early studies reported contravening views of the above as domestic banks in the US were found to record attractive profitability and more efficiency levels than foreign banks (Hasan and Hunter 1996; Mahajan et al. and Edward Chang et al.,1998). In the same vein, studies by Claessens et al. (2001) and Demirgüç-Kunt and Huizinga (1999) found that depending upon the host country's economic position and development, the performance of foreign banks can either be attractive or otherwise. The researchers reported that, in developed countries, foreign banks record lower profits than domestic banks. In contrast, the case is contrary in developing countries as domestic banks register better profits than foreign banks.

In light of the above, there is still a gap in the literature due to inconclusive arguments about bank performance concerning the ownership structure. There has been a mixture of contravening results. As such, the current study is geared toward addressing the gap in the literature. It is also imperative to note that relatively few studies on bank performance have been conducted in developing countries, especially Tanzania. Moreover, TSA adoption in Tanzania has added another important aspect to be studied concerning bank performance in the Tanzania context. Tanzania adopted TSA in January 2016, and to date, few studies have attempted to study TSA's impact on bank performance, and even those that have tried to do so have not reviewed bank performance across bank classifications. Consequently, the present study fills the gap and contributes to the body of knowledge for further reference.

2.3.2 An Overview of the Influence of Bank-Specific Factors, Industry and Country-wide Variables on Bank Performance

This section discusses how external and internal factors, such as macroeconomic factors and bank-specific factors, affect the performance of banks. The interior elements that affect a bank's performance are called bank-specific factors. The bank's size, risk, capital, assets, and deposit are a few of them, but they are not the only ones. The size of the bank and two financial risks—liquidity risk and credit risk—are covered in the current study. Macroeconomic variables, on the other hand, are examples of external (industry- and nation-wide) factors influencing bank performance. The present research is centered on four macroeconomic variables: lending interest rate, inflation rate, exchange rate, and GDP growth rate.

Though there are few studies on bank performance in the African context, numerous studies have been carried out globally to assess the influence of internal and external factors affecting bank performance. Earlier studies have pointed out several specific factors affecting bank performance, including but not limited to bank size, bank risks such as credit and liquidity risk, cost management, and the market power of the banks (Athanasoglou et al., 2008; Bourke, 1989; Carbó and Rodríguez, 2007; Flamini et al., 2009; Ghosh, 2016; Molyneux and Thornton, 1992; and Short, 1979).

2.3.2.1 Bank-Specific Characteristics and Bank Performance

As pointed out above, bank-specific factors represent all the internal factors affecting bank performance. These include but are not limited to bank size, liquidity position, credit risk, capital, and asset quality.

2.3.2.1.1 Size and Bank Performance

Studies by Athanasoglou et al. (2008) and Dietrich and Wanzenried (2014) assert that the association between size and bank profitability has been discussed in several studies with inconclusive results. Studies show that there could be a positive or negative association between the two. In connection with the foregoing, studies that support the positive association between size and performance suggest that it is due to economies of scale that cause differences in bank performance (Athanasoglou et al., 2008; Bourke, 1989; Dietrich and Wanzenried, 2014; Flamini et al., 2009; Molyneux and Thornton,1992; Short, 1979). The researchers have also found that those banks that lead in the industry tend to make an attractive profit as their size increases. On the other hand, (Dietrich and Wanzenried, 2014; Micco et al., 2007) assert that bank

expansion, either in the form of a new market entrant or newly opened branches, may attract extra operational costs and eventually wear down the profit.

Oteroa et al. (2019) used panel data for eight years, from (2005–2012) using the GMM model to estimate the regression between cost efficiency and other determinants. It was found that bank size exhibited the significance of scale economies and capital levels. Generally, the result shows a positive association between cost efficiency and economic performance.

The study by (Goddard et al. 2004, p. 378) found some elements of positive size and profitability association in some indicators. However, there is no evidence to convince the presence of a systematic relationship between the two variables. Allen et al. (2011) assert that, in Africa, the cost of banking operations is high due to information asymmetry, which is most likely to be emphasized in times of crisis as there is a lack of confidence in the market. As a result, the cost of developing the product, the diversification cost, and the cost of expanding bank branches may be restricted (Ahokpossi, 2013; Shehzad et al., 2013). Recovery of the cost may not be attained due to a crisis that may cause uncertainties and market imperfection to be high. As such, economies of scale may not be achieved as expected, such as impairing the strong correlation between a bank's size and its capacity for profit generation. Flamini et al. (2009) found that in monopolistic competition, there is strong evidence that chances are high for large banks to earn supernormal profit due to the low cost of borrowing and superior earnings they get from charging higher lending rates (Allen et al.,2011).

Al-Homaidi et al. (2018) studied the influence of specific macroeconomic factors on Indian commercial banks' profitability using panel data. NIM, ROA, and ROE were the main variables used to measure banks' profitability. Bank size, capital adequacy, number of bank branches, and liquidity were other bank-specific factors that were assessed to influence commercial banks' profitability. At the same time, (i) Gross Domestic Product (GDP), (ii) interest rate, (iii) inflation, and (iv) effective exchange rate were examined as macroeconomic variables affecting bank performance. Except for several bank branches, the result revealed a significant relationship between all bank-specific factors, i.e., bank size, liquidity, and the rest, on NIM as one of the profit indicators. There was also a significant association between bank size and ROA.

2.3.2.1.2 Risk and Bank Performance

Van-Greuning and Iqbal (2007) assert that recent literature on banking studies has focused on corporate governance studies. The study by Beasley et al. (2005) found that whenever the governance structure concerning enterprise risk management (ERM) is abused, serious problems might arise in policy formulation. As such, the role played by the board oversight complemented by senior management oversight on the risks facing the bank's portfolio may be impaired. The ERM process manages the financial, market, credit, and operational risks (Ames et al., 2018). Due to the challenges posed by the financial crisis, many economists, regulators, scholars, and policymakers have focused on dealing with all enterprises' risks more comprehensively and coherently (Bromiley et al., 2015). In addition, the focus is also put on advancing the governance structure of systems in place to manage the risks (Lundqvist, 2015).

Ghosh (2018) used panel data in the ambiance of the agency theory to assess MENA countries' bank performance for thirteen years, i.e., from 2000 to 2012. He found that the reforms in corporate governance that emphasize risk factor disclosure and independence of the board are the key variables that impact the behavior of banks. These disclosures negatively impact most Islamic banks' overall profitability and stability. On the other hand, Aljughaiman and Salama (2019) used Pooled Ordinary Least Squares (OLS) to study MENA region-bank performance using time series data from 2005 to 2015. The performance of conventional banks was found to be more related to the risk-taking attitude of banks with relatively more robust board levels – Risk Committee.

Aljughaiman and Salama (2019), in their study on banks' effectiveness in risk management and the risk governance role in the MENA region, have adopted the risk-taking attitude in a comprehensive sight by assessing the five most hazardous risks, which are liquidity risk, credit risk, operational risk, and insolvency risk. The study evaluated the influence of governance on institutional behaviors and risk-taking concerning standard conventional and Islamic banks. The researchers' written expression asserts that the study under reference is the first to attempt to assess the influence of Islamic bank governance mechanisms on risk-taking attitudes. Nevertheless, their study did not focus much on the impact of a risk-taking attitude on bank performance. As such, this study is, therefore, an extension of the limited literature as far as how the risk-taking attitude may impact bank performance. The present research studied how credit and liquidity concerns affected the performance of Tanzania's banking sector.

According to the BOT risk management guidelines for banks and financial institutions (2010), these banks have six key risks. These are liquidity, credit, market, operational, strategic, and compliance risks. The present study discusses credit and liquidity risk in conjunction with bank performance as per subsequent sections below.

2.3.2.1.3 Credit Risk and Bank Performance

As pointed out in the key definitions above, credit risk is one of the critical risks facing banking institutions. It refers to the possibility of a situation where the obligor or borrower is either grudging to accomplish a responsibility or probably its capability to accomplish such a commitment is severely compromised, such as causing potential financial harm to the lending institution (BOT-RMGS, 2010). In connection with the study by Aljughaiman and Salama (2019) above, they found that when the overall risk indicator is split into separate components, the credit risk is assessed to bear a significant portion of the risk in the period before the crisis for both all types of bank. It should be appreciated that prior studies have attempted to investigate the influence of risk on banks' financial performance.

Cihák and Hesse (2010) assert that Islamic banks face a more severe credit risk than conventional banks due to the Islamic finance model, which is more inclined to lease arrangements that may increase the chances for customers to fail to honor their contractual obligations. Regardless of the arrangement of profit/loss sharing, the credit risk is shifted to the depositors' money, such as raising almost the entire risk on the banks' assets as a whole because instead of the debt-holders bearing the risk, impliedly, it is the equity holders who bear the burden on behalf of the debt-holders.

It is also imperative to note that the practices of Islamic banks not using credit derivative instruments or non-debts rescheduling and the practice of not charging interest and penalties for late loan repayments have brought about a higher default risk on Islamic banks than conventional banks (Chapra and Ahmed, 2002; Sundararajan, 2007).

2.3.2.1.4 Liquidity Risk and Bank Performance

Liquidity risk has been highlighted by BOT-RMGS (2010) as the possibility of an institution failing to honor its maturing obligation as and when it falls due. Moreover, liquidity risk arises whenever an institution incurs unexpected costs or unbearable losses while funding its assets. It could also be in the form of an institution's failure to finance its operations and assets due to funding source deficiencies or market volatilities that may pose difficulties in quickly liquidating assets without impairing their value. The same arguments about liquidity risk are explained by (Chapra and Ahmed, 2002).   According to Sundararajan (2007), liquidity risk predominantly affects Islamic banks more than conventional banks due to the influence of religious aspects on Islamic banks, as these banks cannot obtain interest rates bearing funding on religious grounds. In this regard, during the period of a critical liquidity squeeze in the market, Islamic banks are more likely to face a severe liquidity risk than conventional banks (Safiullah and Shamsuddin, 2018). In addition, it is also imperative to note that the reliance on an almost single source of financing, which is more inclined to an asset-based financing model, makes the liquidity risk even worse during times of a severe liquidity squeeze in the market. Traditional financing instruments such as

certificates of deposit (CD) and repurchase agreements could help Islamic banks avoid short-term liquidity challenges (Basher et al., 2017).

Ames et al. (2018) and Ellul and Yerramilli (2013) revealed a positive risk and performance relationship. Nevertheless, Ames et al. (2018) demonstrated that such a relationship transpires in the long and not in the short run. Additionally, the study found that a robust risk committee has a direct positive impact on the effectiveness of the risk management practice. This is to say that conventional banking institutions' performance and risk-taking attitude have shown a positive association, whereas there was no evidence of a similar relationship for Islamic banks.

2.3.2.2 Industry Specific, Country-wide Variables and Bank

Many theories and studies have proven the existence of an association between macroeconomic variables (industry-specific, country-wide variables), solvency risk, and bank performance. Nevertheless, there is a mixture of results by different scholars, such as making the study inconclusive. Some studies show that findings can bring different results depending on the sample, specification, and data set (Combey and Togbenou 2017).

A literature review reveals that bank-specific factors are the internal factors affecting bank performance. These factors include but are not limited to liquidity position, bank size, capital, operational efficiency, and solvency risk. On the other hand, macroeconomic factors are regarded as external factors affecting bank performance.

These include GDP, inflation, and the country's effective exchange rate. (Combey and Togbenou 2017).

2.3.2.2.1 Lending Interest Rate and Bank Performance

Previous scholars came up with different results in studies that evaluate how interest affects the banking industry's profitability. Banks' lending interest rates have been used widely. While Yahya, Akhtar, and Tabash (2017) showed that interest rates and bank performance had a positive affiliation, Jabeen and Rashid (2016) found an inverse association between the variables above. The study by Al-Homaidi et al. (2018) on the influence of specific factors and macro-economic factors affecting Indian commercial banks' profitability found that all the macroeconomic factors, namely (i) exchange rate, (iii) inflation rate, (ii) interest rate, as well as (iv) GDP, have recorded a significant negative association with commercial banks operating in India.

Borio et al. (2017) found that bank profitability declines at low-interest rates and that as rates fall, the profitability's sensitivity to rate reductions increases. Furthermore, Borio and Gambacorta's (2017) research showed that bank lending becomes less responsive to policy rate cuts as they go closer to zero, which suggests that the financial channel of the monetary transmission mechanism weakens as interest rates get closer to zero. According to Brunnermeier and Yann (2018), the strain on the banking industry may eventually become so great that further rate cuts will be contractionary instead of expansionary.

Crowley (2007) emphasized the importance of interest rate fluctuation on a bank's financial performance. The discussion highlights that a bank's financial performance determines the direction of economic growth. The interest rate acts as an economic tool central banks use to manage the economy's money flow. Other studies (Ahmed et al., 2018; Maigua and Mouni, 2016; Enyioko, 2012) also opined that the management of interest rates directly determines banks' financial performance. The more money the borrower pays to use money from the lender (financial institutions), the more profitable the banks and other financial institutions become. This means interest rates may positively impact a bank's performance.

On the contrary, Lopez et al. (2020) argued that interest rates may also have a negative impact on a bank's financial performance if the price of borrowing is higher than the borrower's income or profit. This situation makes the interest rate less attractive. Hence, the demand for lending will significantly decrease, which means the bank's direct income will fall. Although the fluctuation of the market interest rate can have either a negative or positive effect on banks' performance, proper management of the interest rate (equilibrium interest rates) can directly be used as an economic tool to control inflation and boost economic growth (Ng'ang'a, 2017; Wambari and Mwangi, 2017). According to Maigua and Mouni (2016), the level of a bank's financial reserves and market interest rate determines the price of borrowing. Therefore, when banks have enough deposits, the level of borrowing goes up significantly. Thus, market interest rate prices automatically drop when the supply is high and demand is low.

2.3.2.2.2 Inflation and Bank Performance

The assessment of the influence of inflation on bank performance has been incepted in theory for the first time by Revell (1979). According to his assessment, a bank's profitability is highly affected by inflation, primarily through running costs such as operational costs and salary. As the inflation rate rises, chances for a bank's profitability to decline are high, as inflation can increase pay and operating costs. However, banks can adjust interest rates accordingly to accommodate an increase in the inflation rate. As such, banks can eventually improve revenue ahead of running costs, ultimately boosting profitability. (Trujillo-Ponce, 2013).

Research reveals that banks' performance and inflation are strongly and negatively correlated, such that inflation levels determine or affect the progress of all financial activities in banks (Alzoubi, 2021). Relevant studies (Moyo and Tursoy, 2020; Abdallah and Saadat, 2020; Alzoubi, 2021) have discussed that when the prices of goods and services shoot high, the consumers' purchasing power decreases due to inability to buy goods at a high price. Consequentially, borrowers, including businesses, cannot fulfill their loan obligations. This directly affects banks' financial activities and profits. Therefore, higher inflation implies less long-term economic activity and less income for financial institutions. Jilenga and Luanda (2021) connote that when inflation is high, financial institutions or intermediaries will be reluctant to lend money to borrowers, the allocation of capital and liquidity will decrease effectiveness, and equity markets will be less expansive. According to Alzoubi (2021), It is fundamentally important to understand that inflation negatively affects the value of money, investment returns, and goods and services while income remains constant.

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2.3.2.2.3 Exchange Rate and Bank Performance

Early studies found that exchange rates can cause a bank's assets and liabilities volatility. As such, most banking activities are vulnerable to the risk of adverse movement of the exchange rate (Adler and Dumas 1980). Banks with foreign subsidiaries or foreign branches or any foreign operation and those banks with transactions in foreign currency are the ones that are highly affected by exchange rate movements Chamberlain et al. (1997). It should also be appreciated that not only are banks with foreign currency activities that are affected by the exchange rate, but also even those without foreign transactions and foreign operations can be indirectly affected by exchange rate movements through the influence of demand for lending to customers, foreign banks competition and other facets of banking environments (Keshtgar et al., 2020) as exchange rate falls (i.e., the local currency depreciates relative to foreign currency) than domestic producer benefits as it promotes international competitiveness. It makes it easy to export goods at the lowest price, stimulating demand for exportation (Luehrman, 1991).

Consequently, bank loans and customer deposits will upsurge, such as bringing about an increase in the bank's profitability. On the contrary, the price of imported goods increases, such as reducing domestic customers' purchasing power during local currency depreciation. Given the above, the non-performing loan rate may increase, eventually eroding banks' profitability.

Combey and Togbenou Apelete (2017) assessed the influence of macroeconomic variables on the performance of the banking sector in Togo using the 2006 to 2015

data. Inflation, effective exchange rate, and GDP are the three macroeconomic variables applied in the study. The results revealed that macroeconomic variables do not influence return on equity (ROE) and Return on Asset (ROA) in the short run. It was therefore demonstrated that ROA is closely associated with capital and the size of the bank, whereas ROE has a negative association with the bank's capital. On the other hand, in the long run, effective exchange rate and real GDP growth have a statistically significant negative association with the bank's ROA.

In contrast, the inflation rate was assessed to have no impact. Regarding ROE, it was revealed that inflation, real GDP, and effective exchange rate are negatively associated with return on equity. The study recommended that the improvement of GDP, stability of exchange rate, and inflation rate can help the stability of the banking sector's profitability. As such, policymakers and regulators should put a very close eye on these variables.

2.3.2.2.4 Gross Domestic Product and Bank Performance

Studies by Bolt et al. (2012), Calza et al. (2006), and Jimenez et al. (2009) revealed that operational cost, net interest income, and loan losses are the three major channels that are positively affected by real GDP growth as the economic recession takes charge, the profitability of many sectors declines and improves during the period of expansion of economic activities. In light of the preceding, bank loans and customer deposits also grow as GDP grows, improving banks' net interest margins and decreasing loan losses. In the same vein, GDP growth brings about a higher level of disposable income, satisfactory employment records, and an improvement in non-

performing loans. However, there is an unclear association between the two variables concerning operational cost and GDP. The study by Bolt et al. (2012) reveals that an adverse economic environment, such as a decline in GDP, may deteriorate customers' deposits and bank loans and the cost of monitoring and controlling the same.

According to Phan et al. (2020), gross domestic product (GDP) performance positively influences the banks' ability to grant business loans. GDP significantly affects banks' performance (regarding loan obligation, investment return, and profitability) throughout the business cycle. Other discussions further emphasized that when there is an economic downturn (recession), the phenomena negatively affect banks' quality of loan portfolio, leading to non-performing loans and, subsequently, a decrease in banks' profits (Chen et al., 2018; Usman & Lestari, 2019). Hence, when the economy expands, the performance of banks (i.e., loan portfolio, investment returns, etc.) significantly improves (Fani et al., 2018; Usman & Lestari, 2019). Relevant findings (Alam et al., 2021; Olawumi et al., 2017; Usman & Lestari, 2019) have also revealed the total value of goods and services produced within a country (also known as GDP) has a positive impact on the performance of financial institutions. Thus, the more a country produces, the higher the income for the people. This means people will have more money to save at the bank, which increases local deposits. Usman and Lestari (2019) instigated that when banks have sufficient deposits, more enterprises will have access to loans to expand their businesses, increasing banks' financial performance in terms of higher net income.

Chen et al. (2018) argued that despite the impact of a positive GDP performance, a higher interest rate would negatively affect banks' loan portfolio and subsequent lower net income due to the possibility of a lack of borrowing or default on a loan obligation. Therefore, the banks' interest rate must remain at an equilibrium level to stabilize the bank and economic performance (Alam et al., 2021).

2.4 Observation of the Overall Methodologies Used in Prior Studies

The influence of ownership structure, bank-specific characteristics, and macroeconomic variables concerning bank performance in numerous markets have been discussed using diverse techniques. Table 2.1 summarizes a list of approaches that were applied in previous studies. The table gives evidence of various methodologies that different authors applied. It should, however, be appreciated that studies that involved cross-sectional data experienced the impact of individual or personalized heterogeneity. Previous researchers argue that cross-sectional data fails to give the appropriate instrument to handle diverse individual differences accountable for ownership endogeneity (Börsch-Supan and Köke, 2002). It has also been observed that past studies have limited literature concerning the impact of TSA on bank performance. In light of the above, and to address challenges posed by cross-sectional data, the present study applied panel data analysis. Arguments in favor of panel data are discussed in detail in chapter three.

Moreover, studies that applied OLS summarised in Table 2.1, experienced endogeneity hitches. Researchers argue that an OLS estimator occurs under limited assumptions, which could be multicollinearity, autocorrelation, normality, or

homoscedasticity. (Baltagi, 2005; Gujarati and Porter, 2009. Bascle (2008) argues that chances for reporting specious results are high if OLS estimators are used, as Basel discussed that these estimators are biased and produce inconsistent results. However, (Bascle, 2008) asserts that OLS can produce consistent results if the variables are appropriately handled. However, studies by Flannery and Hankins (2013) and Wooldridge (2002) claim that the OLS estimator cannot control unnoticed heterogeneity, simultaneity, and dynamic endogeneity. As such, they argue that OLS is not reliable. Given the preceding, Arellano and Bond (1991) and Blundell and Bond (1998) argue that to address weaknesses posed by the OLS estimators, researchers can use the GMM estimator as it addresses the challenges of unnoticed heterogeneity and endogeneity, which occurs when using OLS. However, a review of recent studies on banking performance from 2017 to date has consistently used the OLS estimator.

This justifies that, regardless of their weaknesses, OLS estimators are still reliable and can still be used by researchers. Examples of few published studies that have applied OLS include but are not limited to the studies by Aljughaiman and Salama (2019), Lea et al. (2019), Pillai et al. (2017), Ghosh (2018) and Ozili and Uadiale (2017). As pointed out, prior studies (Bascle, 2008) argued that OLS can still be used if the variables are appropriately handled. There is a reasonable justification for using OLS in bank performance studies. As such, the present study applied the Pooled Ordinary Least Square estimator under the ambiance of panel data analysis.

Lastly, it has been observed that few works of literature, most of which are discussed in the Nigerian context, have attempted to discuss TSA's impact on bank performance.

On top of that, the CAMELS rating system has not been used widely, regardless of its importance in measuring bank performance. This can be justified because many other studies on bank performance are more inclined to use standard financial ratios such as ROE, ROA, and NIM. It is, therefore, fertile to familiarise researchers with applying this robust bank performance measurement criteria to promote its application. On top of that, the present study combined the CAMELS model and TSA in measuring banks' performances. The study's use of various factors produced some intriguing findings. In light of the limitations mentioned above, the present study addressed these gaps accordingly, stimulating further discussions for studies that adopt similar variables.

A summary of the prior empirical findings on ownership structure, bank characteristics, macroeconomic variables (industry and country-wide variables), single treasury accounts, and bank performance are highlighted in Table 2.1.

Table 2.1: **Summary of Past Studies with Relevant Theories and Methodologies Used**

Authors and Country	Variables Used	Type of Data and Methodology Used	Theory Used	Findings
Peter Wanke, Md Abul Kalam Azad,, Ali Emrouznejad, Jorge Antunes (2019)

The Middle East and North Africa (MENA) Countries | Endogenous variables. Such as Efficiency scores for (i) profit sheet, (ii) balance sheet, and (iii) financial health indicators | Time series data from (2006–2014) using Dynamic Network Data Envelopment Analysis (DEA) model . | Agency theory | A Bank's origin, type of bank, and structure of ownership are associated with banking efficiency concerning balance sheet, financial health, and profit sheet indicators— nevertheless, barriers such as regulatory and cultural existence in each country. |
| Saibal Ghosh (2018) The Middle East and North Africa (MENA) countries | Return on Assets (ROA), Z-score, represented by (ROA+EA)/SDROA, such that EA is the ratio of equity to total assets while SDROA represents the rolling standard deviation of ROA based on the number of observations | Panel Data, (2000–2012) using Regression Analysis | Agency theory | Reforms in corporate governance that emphasize risk factors disclosure and independence of the board are the key variables that impact the behavior of banks, and these sorts of disclosures have notable differential impacts on the overall profitability and the stability of most Islamic banks. |
| Peterson Kitakogelu Ozili and Olayinka Uadiale (2017) Nigeria | Cost efficiency (CI), Capital adequacy (CA), Asset quality (AQ), and Regulatory capital ratio (TRC), as well as the macroeconomic growth rate (ΔGDP). Profitability is a dependent variable measured using ROA, NIM, ROE, and the recurring earnings power (REP). | Panel Data from (2006 to 2015) using a Regression model. | Agency theory | A high concentration of ownership in a bank brings attractive ROA, NIM, and higher/improved bank's recurring earning ability. In contrast, those with detached ownership earn a lower ROA but an attractive ROE. Also, if cost efficiency is high, it improves the ROA of widely-held institutions and the ROE of those whose ownership is moderate. |

Authors and Country	Variables Used	Type of Data and Methodology Used	Theory Used	Findings
Phuong Thanh Lea, Charles Harvieb, Amir Arjomandib, and James Borthwick (2019) Vietnam	Bank ownership structure indicators, policy-change indicators as well as control variables. These control variables are bank-specific as well as time trend variables.	Panel data consisting of 317 from (2005–2015) using a Regression model. and DEA double bootstrapping methodology to measure banking efficiency under the intermediation and operating approaches	Agency theory	(i)Banks owned by the state recorded a superior performance than all other banks (ii) selective state-owned that were later privatized had recorded a fairly positive association on efficiency; (iii) private banks transformed from rural to urban declined their efficiency (iv) non-controlling interest/i.e., foreign shareholders recorded an insignificant effect on bank's efficiency.
Luis Oteroa,, Alaa Raziab, Onofre Martorell Cunillc, and Carles Mulet-Fortezac (2019) MENA countries	Return on Assets (ROA), market share, equity, bank size, and loan growth rate. i.e. (the gross loan) .	Panel data of 201 from (2005–2012) using the GMM model to estimate the regression between cost efficiency and other determinants	Agency theory	Results show a positive association between cost efficiency and economic performance. Nevertheless, market share and concentration level have a negative association with the latter. Bank size proves the significance of scale economies and capital levels, which also have a positive association. GDP and inflation have a positive association with the overall cost function.
Bdullah A. Aljughaiman and Aly Salama (2019) MENA region-Middle East and North Africa	Bank-specific or (internal factors) and country-wide variables,	Time series data from (2005 to 2015) using Pooled Ordinary Least Squares (OLS)	Agency and Institutional theories	The performance of Conventional banks is more related to the risk-taking attitude of banks with a relatively more robust board level – the Risk Committee.

Authors and Country	Variables Used	Type of Data and Methodology Used	Theory Used	Findings
Rekha Pillai, Husam Aldin, Nizar, and Al-Malkawi (2017) GCC countries	Government or state shareholdings, auditing type, board membership size, corporate social responsibility as well as leverage .	Panel data set of 349 firms from (2005-2012). Using the Generalized Least Squares (GLS) .	Agency and Institutional theories	The findings of this study revealed that corporate governance variables, including state- shareholdings, size of the board, type of audit, leverage, and corporate social responsibility, have a considerable impact on the companies' performance in most GCC nations.
Charilaos Mertzanis, Mohamed Basuony, and Ehab K.A. Mohamed (2018) MENA Region countries, including Bahrain, Egypt, Jordan, Kuwait, Lebanon, Morocco, Saudi Arabia, Tunisia and the United Arab Emirates	Ownership and finance: board membership size, independent board members percentage, CEO dichotomy, and the female board members percentage, as well as ownership by majority shareholders, etc. Country-wide variables concerning financial or economic and non-economic or financial factors at the country level were also used.	Time series data from (2007 to 2017)using regression analysis	Agency and Institutional theories	The result between a firm's performance and corporate governance is inconclusive because it depends on the tested variables. The size of the board and ownership structure are considered to be robust variables for accurate prediction. Further, a country's non-financial or economic factors and regulatory factors can affect performance.
Abdullah A. Aljughaiman and Aly Salama (2019) MENA region-Middle East and North Africa	Control variables, including bank-specific variables, country-specific variables, and country and year dummies to test the sensitivity of the results	Time series data from (2005 to 2015) using Pooled Ordinary Least Squares (OLS) with robust standard errors.	Agency and Institutional theories	Harmful kind of association between risk perspectives and the risk governance indices for all banks
María-Victoria, Uribe Bohorquez, Jennifer Martínez-Ferrerob,, Isabel-María,	Race, gender, ethnicity, or experience. Whereby moderating variables are such institutional variables as the country's origin,	Panel data from (2006 to 2015) using truncated regression models and employing data envelopment	Agency and Institutional theories	This paper concurs with the views that the independence of the board increases the technical level of Efficiency to firms. The protection

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Authors and Country	Variables Used	Type of Data and Methodology Used	Theory Used	Findings
García-Sánchez.(2018) Cross countries	legal aspect, and law enforcement level, the presence of laws that protect debt holders' and shareholders' rights,	analysis to examine the efficiency		rendered by the judiciary system and the legal environment positively moderates the results.
Rekha Pillai, Husam-Aldin, and Nizar Al-Malkawi (2017) GCC countries	Government or state shareholdings, type of audit, board member size, leverage, and corporate social responsibility	Panel data from (2005-2012) using the Generalized Least Squares (GLS) method	Agency and Institutional theories	Variables like government or state shareholdings, audit or examination type, board members size, corporate social responsibility, and the degree of leverage significantly impact the firm's performance in most of the GCC countries.
Filipa Da Silva Fernandes, Charalampos Stasinakis and Valeriya Bardarova (2018) Greece, Ireland, Italy, Portugal and Spain	Bank-specific or internal risk variables, environmental variables, and the overall bank efficiency.	Time series data from (2007–2014) using Data Envelopment Analysis and a Double Bootstrapped Truncated Regression	Efficiency theory	The study indicates the presence of fringe efficiency. Then, liquidity risk and credit risk were noted to negatively impact commercial banks' productivity, while capital risk and profit risk attract a positive association with financial performance.
Veronika Belousova, Alexander Karminsky, Nikita Myachin and Ilya Kozyr (2019) Russia	Ownership and control variables include loan quality, asset and liability structure, liquidity, cost and profit, and exchange rate.	Time series data from (2004–2015) using two main methods: DEA and linear programming	Agency and Institutional Theory	Foreign-owned banks have recorded attractive profit efficiency, whereas state or government-owned banks have efficiently shown strength in managing costs compared to almost all other banks. Banks' risk tolerance preferences and the level of specialization matter a lot as far as performance is concerned.
Panagiotis Avramidis,	Profit, bank size, and market value	Panel data from (2001 to 2015)	Efficiency theory	The size of the bank and the market-to-

Authors and Country	Variables Used	Type of Data and Methodology Used	Theory Used	Findings
Christos Cabolis and Konstantinos Serfes (2018) USA		using the fixed effects panel regression model:		book value of the bank's assets are inversely U-shaped, and in addition to that, the costs of monitoring ought to weigh the perceived benefits from the economies of scale.
Mokhamad Anwar (2018) Indonesia	Bank size, capital adequacy, profitability, credit risk management, loans to deposit, and all macroeconomic variables .	Time series data from (2002 to 2010) using Two-stage analysis. TOBIT regression .	Efficiency theory	Bank size, capital adequacy profitability, credit risk management, and loans to deposit are the internal variables impacting the Indonesian banks' cost efficiency. In contrast, all the macroeconomic variables have recorded a significant association in affecting Indonesian banks' cost efficiency.
Hasan Dincer, Umit Hacioglu, Ekrem Tatoglu, and Dursun Delenc (2019) Turkish	Input variable: Capital Ratio (CR), Asset Quality (AQ), Liability Quality(LQ), and Expenditure Structure(ES), Output variable: Return on Equity, Asset Quality Return on Assets, and Income Structure.	Time series data from (2002 to 2013) using a hybrid methodology that combines DEA with FHP within a fuzzy environment for more realistic and reliable analyses.	Efficiency theory	The efficiency of banking activities may vary for the reason of competitiveness and the new adoption of technologies before and after the economic recession; Bank deposit and ownership structure didn't impact performance during the period
Palitha Konaraa, Yong Tanb, and Jill Johnes (2019) Columbia, Hungary, Indonesia, Malaysia,	Industry-wide and country-wide specific indicators such as ownership, capital, size, listed banks, inflation rate, GDP, infrastructure financial crisis, etc.	Panel data from (**1999–2013**.) using DEA to measure the efficiencies. And linear regression technique.	Efficiency and Agency Theory	Foreign-owned banks are advantageous in terms of the overall technical and scale efficiency level. However, foreign banks were found to be less efficient with

Authors and Country	Variables Used	Type of Data and Methodology Used	Theory Used	Findings
Poland, Russian Federation, South Africa and Turkey.				respect to revenue efficiency, cost efficiency, and pure technical efficiency.
Seyed Mehdian, Rasoul Rezvanian/, Ovidiu Stoica (2018) USA	Number of employees, i.e. (full-time) equivalent, Premises and non-current assets; liabilities; labor unit price, Wages and benefits expenses, number of full-time comparable employees; Unit price of fixed assets	Time series data from (2005 and 2016), excluding (2009 to 2012) using linear programming	Agency and Institutional Theory	Large U.S.A. banks had no choice but to change the structure of their portfolio. Their efficiency and that of other large commercial banks in the USA had declined in the financial crisis period, and since then, the recoverability level has been still low.
Oyedele Oloruntoba, Oyewole, Olabode Michael and G. T. Ayo-Oyebiyi (2018) Nigeria.	Banks' liquidity ratio, credit to customers, capital adequacy, and Treasury Single Account (TSA)	Time series data from (2010 to 2016) using Ordinary least Square method of estimation:	Stakeholders' Theory	Treasury Single Account has negatively affected banks' liquidity positions, deposit mobilization, employment creation, saving culture and the overall performance of the Nigerian banking sector
Lucy Andornimye (2017) Nigeria	Current Ratio, i.e. (CR)), Credit Creation (CC), Deposit Mobilization (DM), and Treasury Single Account (TSA)	Time series data from 2010 to 2015) using regression models.	Stakeholders' theory	Banks' working capital has declined significantly, such as impairing banks' ability to meet the short-term maturing obligation. On the other hand, TSA has encouraged bank deposit mobilization, but it has little effect on banks' credit creation ability.

Source: Researcher's compilation from the literature

2.5   Chapter Summary

This study is guided by agency, institutional, efficiency, and stakeholders' theories to capture diverse views about bank performance in the ambiance of the Treasury Single Account model in Tanzania. Bank profitability is the bottom line of financial performance as it sheds light on the stakeholders regarding the financial soundness of an institution. Table 2.1 above summarises critical empirical findings on bank performance in light of ownership structure, bank-specific characteristics, macroeconomic variables, and the treasury single account model. The latter was applied as a moderating variable. Several literature on bank performance discuss more or less similar variables impacting bank performance. However, very few have addressed the impact of a single treasury account on bank performance.

It should, however, be appreciated that the treasury single account model issue is, in particular, relevant to African countries as most of these countries have yet to embark on a wholesale adoption of the TSA account. The present study has discussed the influence of ownership concentration and industry and country-wide variables on bank performance before and after TSA adoption.

Ownership concentration has been discussed in relation to private versus state-owned banks and domestic versus foreign-owned banks. In contrast, industry and countrywide variables have been addressed with regard to macroeconomic variables such as lending interest rate, inflation rate, GDP growth, and average exchange rate. Bank performance has been defined in three categories. Regulatory performance has been discussed in terms of the CAMELS rating system. In contrast, financial

performance has been discussed in terms of financial ratios such as return on asset, return on equity and net interest margin. In contrast, management performance has been defined in cost to income ratio. A detailed analysis of the study variables is explained in chapter three. A literature review revealed that most studies had not discussed regulatory performance measures in conjunction with the CAMELS rating system. Though some studies have attempted to use CAMELS ratios, they have failed to perform the composite CAMELS rating to measure bank performance. Against this short background, the present study intends to cover the gaps above to contribute to the body of knowledge.

Lastly, to address the challenges associated with the heterogeneity of firms, panel data analysis was appropriately applied in this study. The next chapter discusses the methodologies to be used, whereby the panel data analysis, regression models, and the CAMELS model are discussed in detail.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The methodologies for analyzing the influence of ownership concentration, bank characteristics, and macroeconomic variables (industry-specific and country-wide variables) on the performance of the banking sector in Tanzania before and after TSA adoption are discussed in this section with the view of achieving the study objectives.

The chapter is arranged as follows: the introductory part is presented under the current section, trailed by the empirical framework of the study under section 3.2. Methodologies for analyzing bank performance are discussed using three indicators: regulatory performance, financial performance, and management performance. The rationale for the chosen methods is discussed in this section as well. Research design is discussed in section 3.3, whereby types and data sources, data testing procedures, regression analysis, and the CAMELS model are highlighted. The latter is a worldwide model used by regulators to rate bank performance; however, what is still concealed is the gap in the literature on how the final CAMELS rating is computed. Scholars like Ahsan (2016), Chatzi et al. (2015), Khan (2008), Pastory (2010), Pastory and Qin (2012), Rostami (2015), and Tiisekwa (2013) have attempted to discuss CAMELS ratios similar to how traditional ratios are analyzed, which does not give a clear picture of the overall bank performance. This research is therefore geared towards contributing to the body of knowledge with the views of familiarizing researchers on how to analyze the overall bank performance using the composite CAMELS rating system. Sections

3.4, 3.5, and 3.6 discuss the data collection methodology, research variables, and econometric estimators. Lastly, section 3.7 summarizes the chapter by giving the general concluding remarks.

3.2 The Empirical Framework

The association between ownership concentration, bank characteristics, industry and countrywide variables, and bank performance was mirrored by developing and applying five different regression models paralleled by the moderating effect of TSA. Moreover, the CAMELS rating system was used to indicate the overall bank performance from a regulative perspective. Financial performance was examined using ratios ROA, ROE, and NIM. Lastly, management performance was analyzed using the cost-to-total income ratio. The indicators above were analyzed in detail and presented in chapter four.

The rationale for classifying bank performance into three categories is paramount, as this research's findings benefit many users. In conjunction with the moderating effect of the treasury single account system, the CAMELS model was applied to perform CAMELS ratings on each bank classification. The CAMELS rating system is the worldwide model used by regulators to evaluate the overall performance of institutions. In the same vein, financial and management performance was evaluated using selected ratios as pointed out above with the view of alerting investors, the management, and all other interested stakeholders. CAMELS is a widely applied tool by regulators worldwide to rate bank performance. However, how the composite CAMELS rating is computed is still unknown; the present study intends to unfold such

a gap. Thus, the following subsections highlight this study's empirical and conceptual framework.

3.2.1 Conceptual Framework

The visual picture below illustrates the conceptual model in which research variables are interpreted by linking the connection among the study's variables. As far as the study is concerned, ownership structure, bank-specific characteristics, and industry and country-wide variables, namely GDP growth rate, overall inflation rate, and exchange and lending interest rates, were used as independent variables. Bank performance (dependent variables) was measured using three performance indicators: financial performance, represented by ROA, ROE, and NIM. The other two indicators are the composite CAMELS ratings, deduced from the ratings on Capital Adequacy, Asset Quality, Management Capability, Earnings, Liquidity, and Sensitivity to Market Risk. In contrast, the last one (management performance) was measured using the cost-to-income ratio. Treasury Single Account was applied as a moderating variable. 2010 to 2015 represented a pre-TSA adoption, whereas the post-TSA adoption covered 2016 to 2020. A summary of the conceptual frame is summarized in Figure 3.1.

Figure 3. 1 Conceptual Framework for the Study
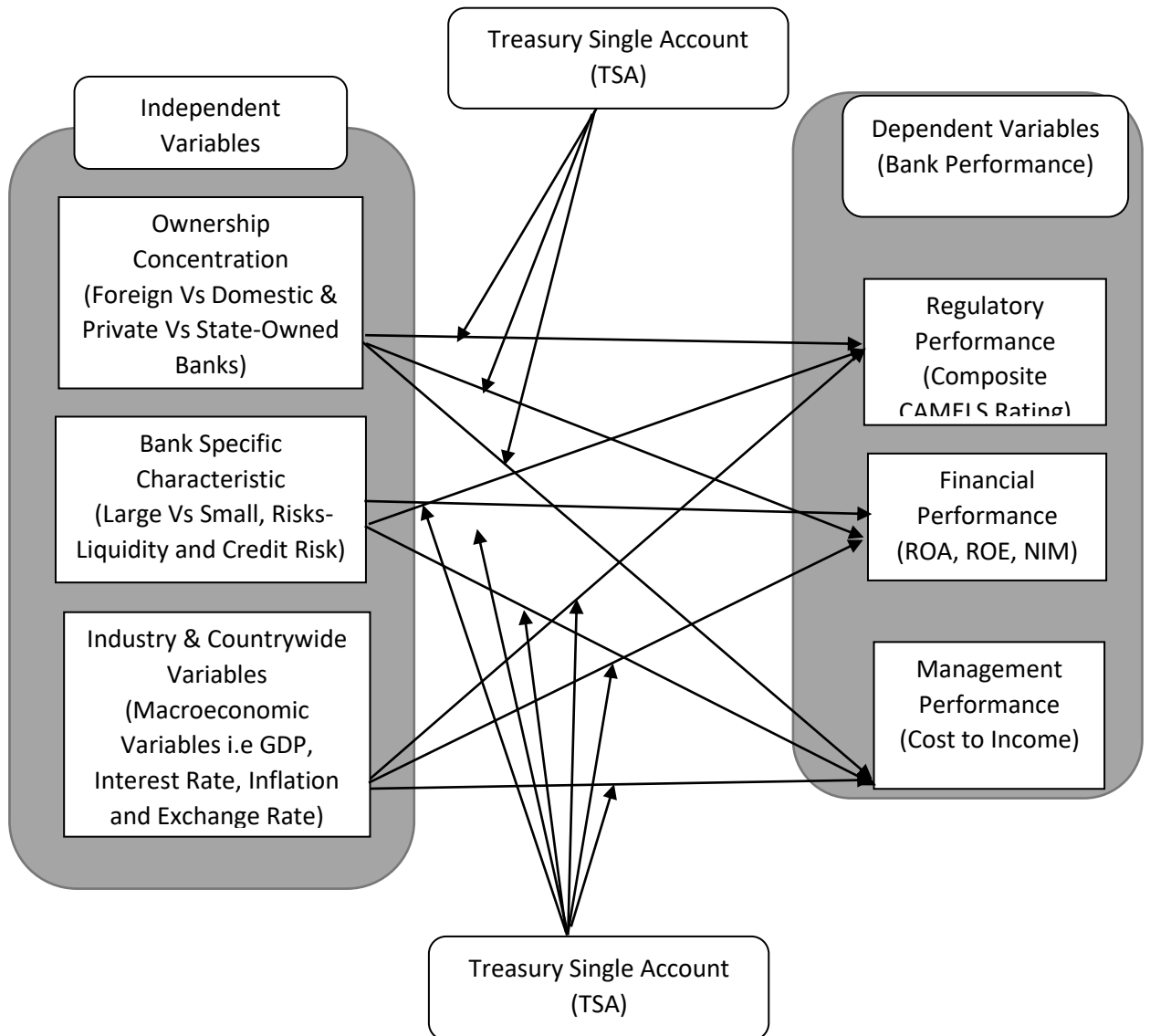
Source: Researcher's Conceptualization

In light of the above chart, it is imperative to note that ownership structure, industry, and country-wide variables were integrated with the agency and institutional theories. In contrast, bank-specific characteristics have been explained in conjunction with the agency and efficiency theories. The Treasury Single Account model (TSA) was applied as the moderating variable, described in conjunction with the stakeholders'

theory and the other theories highlighted above. Section 2.2. chapter two explained the link between the theories above and bank performance.

3.2.2 Model Specification

The study by Menicucci and Paolucci (2016) recommended that linear functional models are appropriate for analyzing bank performance. Several previous studies have employed linear regression models in examining bank performance. At the same time, Bascle (2008) cautioned that the chances for reporting specious results are high if OLS estimators are used due to their biasedness and inconsistent results. He also concluded that OLS could produce reliable results if variables are appropriately controlled.

In the same vein, numerous studies provide evidence of applying several linear models to examine the determining factors of banking sector performance. A review of previous literature revealed that most studies on bank performance had used linear programming models to assess the relationship between bank performance and determining factors. Examples of researches that have applied OLS with either pooled, fixed, or random effect models include the studies by Aljughaiman and Salama (2019), Bougatef (2017), Chowdhury and Rasid (2017), Lea et al. (2019), Pathneja (2016), Pillai et al. (2017), Rashid and Jabeen (2016), Rjoub et al. (2017), Saibal Ghosh (2018), Saona (2016), and Ozil and Uadiale (2017). In view of those above, this study followed suit by adopting a linear regression model to examine the influence of banks' internal and external factors affecting the banking sector performance in Tanzania by using the panel data analysis.

In conjunction with linear regression models, the study used balanced panel data of 30 banks operating in Tanzania for eleven (11) years from 2010 to 2020. The study had 264 panel observations because all selected thirty (30) banks were classified into six categories and analyzed for eleven (11) years quarterly, such as making a total of forty-four periods for all 30 banks. The study classified banks into the following categories: domestic, foreign, state-owned, private, large, and small. As such, the pooled, fixed, and robust random effect linear regression models were used to enhance comparability and consistency of estimation. In the same vein, many other scholars have applied panel data analysis in an attempt to measure bank performance (Avramidis et al.,2018; Lea et al., 2019; Oteroa et al., 2019; Ozili & Uadiale, 2017; Pillai, Aldin, et al., 2017; Ghosh, 2018; Victoria et al., 2018).

The justification for using the panel data warrants merit because the analysis can control and manage multicollinearity and individual heterogeneity (Coleman, 2007). On top of that, panel data is revealed to be an efficient estimate for econometric analysis compared to time series or cross-sectional data (Hsiao, 2003; Baltagi, 2005).

In light of those mentioned above, the same approach and context were applied in the present study using the panel data analysis in conjunction with linear regression models. For that reason, to determine the relationship between ownership concentration, bank characteristics, macroeconomic variables, and bank performance, the following regression models were applied to compare the extent of such relationships before and after TSA adoption.

$$Y_{i,,t} = \beta_0 + (\beta_1 FB_{i,t} + \beta_2 PB_{i,t} + \beta_3 AS_{i,t} + \beta_4 LR_{i,t} + \beta_5 CR_{i,t} + \beta_6 GDP_{i,t} + \beta_7 INF_{i,t} +$$

$$\beta_8 ER_{i,t} + \beta_9 INT_{i,t})*TSA + \varepsilon_{i,t} \text{.......(i)}$$

Whereby $Y_{i,t}$ represents bank performance. Other variables FB, DB, AS, LB, SB, PB, GB, LR, and CR represent foreign banks, domestic banks, Asset size, large banks, small banks, private banks, government or state-owned-banks, liquidity risk (proxied by Loan to Deposit Ratio (LDR) and credit risk proxied by Non-Performing Loans (NPLs), respectively. GDP, INF, ER, and INT represent the gross domestic product growth rate, inflation rate, average exchange rate, and lending interest rate. Treasury Single Account (TSA) described a moderating effect in the regression model, and that is why there are two equations, one representing the regression analysis before and after TSA adoption.

This study centered on three performance measures, namely financial performance, regulatory performance, and management performance, such that "$Y_{i,t}$" embodies performance measures of the bank "i" in time "t." ROA, ROE, and NIM measured financial performance, whereas the composite CAMELS rating represented the overall bank performance from a regulatory perspective. Lastly, management performance was gauged against the cost-to-income-ratio.

The three indicators of financial performance were further explained: ROA measured the return on assets, whereas ROE checked the return on equity. The Net Interest Margin was measured using the Net Interest Income to Total Income. The Composite CAMELS Rating (CCR) is the final rating representing the overall average

performance. Rating scales are expressed in ascending order such that the lower the rating, the better the performance, and vice versa. It should be appreciated that the CAMELS rating system is a worldwide performance criteria tool adopted by all central banks that follows Basel principles and best central banks' practices worldwide. Standard rating scales are expressed from 1 to 5, such that a rating scale of "1" represents strong performance, "2" satisfactory performance, "3" marginal performance,"4" unsatisfactory performance, and "5" critical performance.

FB stands for foreign-owned banks, and the same was a binary variable taking the value "1" if the bank is foreign-owned and has an influence on bank performance at year "t" and "0" if it is a domestic bank. On the other hand, PB stands for privately owned banks, and the same is considered as a binary variable taking the value "1" if the bank is privately owned and has an influence on bank performance at year "t" and "0" if it is state-owned banks. In contrast, AS stands for Asset size, LB stands for large banks, and SB represents small banks.

In light of the preceding, five models were applied to examine the association among the study's variables, such that the above bank characteristics and macroeconomic variables were regressed using the three bank performance indicators, i.e., financial performance (ROA, ROE, and NIM), composite CAMELS rating (CCR), as well as management performance (cost-to-income ratio or Cost Efficiency ratio (CE)). The following specific models for each dependent variable were applied, and each model tested the regression results before and after TSA adoption.

Model 1

$$\text{ROA} = \beta_0 + (\beta_1 \text{FB}_{i,t} + \beta_2 \text{PB}_{i,t} + \beta_3 \text{AS}_{i,t} + \beta_4 \text{LR}_{i,t} + \beta_5 \text{CR}_{i,t} + \beta_6 \text{GDP}_{i,t} + \beta_7 \text{INF}_{i,t} + \beta_8 \text{ER}_{i,t} + \beta_9 \text{INT}_{i,t})*\text{TSA} + \varepsilon_{i,t} \ldots\ldots\ldots..(1)$$

Model 2

$$\text{ROE} = \beta_0 + (\beta_1 \text{FB}_{i,t} + \beta_2 \text{PB}_{i,t} + \beta_3 \text{AS}_{i,t} + \beta_4 \text{LR}_{i,t} + \beta_5 \text{CR}_{i,t} + \beta_6 \text{GDP}_{i,t} + \beta_7 \text{INF}_{i,t} + \beta_8 \text{ER}_{i,t} + \beta_9 \text{INT}_{i,t})*\text{TSA} + \varepsilon_{i,t} \ldots\ldots\ldots..(2)$$

Model 3

$$\text{NIM} = \beta_0 + (\beta_1 \text{FB}_{i,t} + \beta_2 \text{PB}_{i,t} + \beta_3 \text{AS}_{i,t} + \beta_4 \text{LR}_{i,t} + \beta_5 \text{CR}_{i,t} + \beta_6 \text{GDP}_{i,t} + \beta_7 \text{INF}_{i,t} + \beta_8 \text{ER}_{i,t} + \beta_9 \text{INT}_{i,t})*\text{TSA} + \varepsilon_{i,t} \ldots\ldots\ldots..(3)$$

Model 4

$$\text{CCR}_1 = \beta_0 + (\beta_1 \text{FB}_{i,t} + \beta_2 \text{PB}_{i,t} + \beta_3 \text{AS}_{i,t} + \beta_4 \text{LR}_{i,t} + \beta_5 \text{CR}_{i,t} + \beta_6 \text{GDP}_{i,t} + \beta_7 \text{INF}_{i,t} + \beta_8 \text{ER}_{i,t} + \beta_9 \text{INT}_{i,t})*\text{TSA} + \varepsilon_{i,t} \ldots\ldots\ldots\ldots..(4)$$

Model 5

$$\text{CE}_1 = \beta_0 + (\beta_1 \text{FB}_{i,t} + \beta_2 \text{PB}_{i,t} + \beta_3 \text{AS}_{i,t} + \beta_4 \text{LR}_{i,t} + \beta_5 \text{CR}_{i,t} + \beta_6 \text{GDP}_{i,t} + \beta_7 \text{INF}_{i,t} + \beta_8 \text{ER}_{i,t} + \beta_9 \text{INT}_{i,t})*\text{TSA} + \varepsilon_{i,t} \ldots\ldots\ldots..(5)$$

3.2.3 Research Hypothesis

The following research hypothesis guided this study to examine the association among the variables. These hypotheses aligned with the research objectives highlighted in Chapter One.

H0a: The influence of ownership concentration has no significant impact on bank performance before and after TSA adoption.

H1a The influence of ownership concentration significantly impacts bank performance before and after TSA adoption.

H0b: The influence of bank-specific characteristics has no significant impact on bank performance before and after TSA adoption.

H1b The influence of bank-specific characteristics significantly impacts bank performance before and after TSA adoption.

H0c The influence of industry-specific and country-wide variables has no significant impact on bank performance before and after TSA adoption.

H1c The influence of industry-specific and country-wide variables significantly impacts bank performance before and after TSA adoption.

3.3 Data Type and Data Sources

3.3.1 Panel Data

Baltagi (2005) defined panel data as a pool of numerous observations deduced from a cross-sectional of firms, households, or countries for multiple periods. Panel sort of data can either be balanced or otherwise. Whenever there is general availability of all observations for the whole study period, that is described as balanced panel data, whereas whenever some observations are missing, the panel will be described as unbalanced panel data (Baltagi, 2005; Porter and Gujarati, 2009). Since every observation was included throughout the study, balanced panel data sufficed. No new

entries were added to avoid chances for recording and reporting biased results. Panel data is widely used in most recent studies compared to past studies when time series was primarily applied. In recent studies on bank performance, panel data is preferred to time series data. Examples of studies on bank performance that have used panel data include Ghosh (2018), Lea et al. (2019), Luis et al. (2019), Ozil and Uadiale (2017), and Pillai et al. (2017).

Furthermore, instead of the panel data, time series data are organized so that data sorted for a particular unit or individual are gathered and arranged accordingly. Due to difficulties in predicting what might happen in the future, time series data are naturally described as non-deterministic (Cochrane, 1997). The time series process is referred to as a black box because the system depends much on the past conduct or behavior of the critical variables instead of focusing on the explanatory variables. Box and Jenkins (1970) avow that fifty (50) observations or more are vital to executing time series examinations. While time series require collection of data to be sourced from a unit or specific individual for numerous periods, collection of cross-sectional data is sought from individuals or teams at a well-defined point. However, panel data is superior to the abovementioned techniques, as it combines cross-sectional and time series data (Gujarati and Porter, 2009). In this regard, panel data covers time factors and dimensions (Gujarati and Porter, 2009).

Some of the time series data drawbacks include autocorrelation problems. This occurs when the residuals have no independence and the covariance deviates from zero. Concerning cross-sectional data, the regression analysis results experience the

problem of heteroskedasticity. Generally, panel data are sometimes referred to as pooled, micro panel, longitudinal, or pooling of time series data and cross-sectional observation.

3.3.2. General Advantages of Using Panel Data

Baltagi (2005) and Hsiao (2003) assert that using panel data brings numerous advantages over time series or cross-sectional data. Since each firm has its specific characteristics, panel data can help avoid heterogeneity among the corporations. Much as time series and cross-sectional data can -not control the issue of heterogeneity- the chances of producing biased results are very high (Arellano, 2004). Using time series or cross-sectional data has biased results when the model omits variables that affect performance. Similarly, if variables are unavailable, biased results will occur too.

Moreover, all unobserved factors are draconically controlled using the panel data and won't appear in the regression model. In this regard, spurious correlation is well maintained using the panel data approach. (Bozec, Dia and Bozec, 2010).

In addition, panel data can provide enlightening data, allowing inconsistency and minimal co-linearity in conjunction with creating efficiency and a higher degree of freedom. This is contrary to time series and cross-sectional data, which are affected by heteroscedasticity, autocorrelation, and multicollinearity.

Furthermore, while the suitability for studying dynamics of change is possible using the panel data, it has been observed that cross-sectional data are contrary to that as its

data needs to be examined severally. This implies that a panel survey is suitable to study economic policy changes. As the present study requires checking the impact of the moderating role played by the 2016 Treasury Single (TSA) Account system adoption, panel data becomes the most suitable technique. On top of that, as bank performance tends to change frequently, cross-sectional data was considered unsuitable due to the high chance of producing biased results.

Lastly, panel data have been proven to bring flexibility, unlike the time series and cross-sectional data, which have less flexibility. It allows researchers to hypothesize and test numerous simple to complicated models, such as technical efficiency. It also makes panel data superior to time series and cross-sectional data.

3.4 Methodology of Data Collection

The discussion about data collection, procedures for selecting suitable samples, model specification, and relevant econometric tools applied in the study are presented in this section.

3.4.1 Data collection and sampling

Bank of Tanzania (BOT) reports and numerous publications by banking institutions provide all the critical information regarding the Tanzania banking sector. Due to mergers, acquisitions, and takeovers, banking institutions dropped from 51 recorded in 2019 to 46 as of 31st December 2020. Data for all 46 banking institutions are summarised in multiple reports as issued by BOT from time to time. As per the Financial Sector Supervision Annual Report of 2020 by the Bank of Tanzania (BOT),

46 banking institutions were operating in Tanzania. These included thirty-five (35) commercial banks, two (2) development banks, four (4) microfinance banks, and five (5) community banks. The present study covered 30 banks out of 46 institutions that were in existence from 2010 to 2020. Of these 46 banking institutions, foreign banks are the dominants as they account for 30, representing 65% of all banks, whereas the remaining 16 (35%) are designated domestically owned banks. Ten (10) banks, i.e. (21%), are categorized as large banks in terms of total assets held, whereas the rest, 36 (79% fall under the category of small and medium banks, including community and microfinance banks. Because of the preceding, the study employed panel data of 30 banking institutions for eleven years quarterly, i.e., from 2010 to 2020. Table 3.1 summarizes the number of banks and their categories.

Table 3.1: **Banking Institutions in Tanzania as of 31st December 2020**

| | Ownership Concentration (Dom, For, Priv & State) | | | | | | Bank Size | |
| | Domestic Banks | Foreign Banks | State-Owned Banks | | | Private Banks | Large Banks | Small Banks |
			CB	DB.	Total			
Industry size	16	30	2	2	4	43	10	36
Percentage	35%	65%	4.35%	4.35%	8.70%	93.48%	19%	19%
Total Industry Size	**46**	**46**	**46**	**46**	**46**	**46**	**46**	**46**
Sample Banks	14	16	4	-	4	26	8	22
% of Industry	47%	53%	13%		13%	87%	27%	73%
Total Sample	**30**	**30**	**30**	**30**	**30**	**30**	**30**	**30**

Source: BOT, Directorate of Financial Sector Supervision Annual Report 2020. **Note: CB** implies commercial banks, whereas **DB** implies development banks. It has been noted that Before 2018, the industry had 53 **CB** banks, but mergers of 3 state-owned banks and the closure of 5 private banks (all small and domestic banks) dropped the number to 46 banks in 2020, as shown above.

Except for the two development banks, all 30 banking institutions from 2010 to 2020 have been selected to represent the entire population. This large purposive sample was

considered appropriate to obtain robust and reliable evidence about bank performance and its determinants in Tanzania. Notably, in January 2016, the Tanzania government adopted the TSA system forcing banks to adopt new business methods. This was primarily on the issue of deposit mobilization after the government of Tanzania had withdrawn its deposit from commercial banks. As such, commercial banks had to find new ways of deposit mobilization.

A review of past literature revealed that many studies on bank performance still apply the panel data methodology. Examples of these studies include but are not limited to the following: Adnan (2016) examined five (5) Malaysian banks for five years from 2006 to 2011. Chowdhury and Rasid (2017) used a sample of twenty-nine (29) GCC countries' banks from the year 2005 to 2013; Marijana et al. (2014) used USA data of 105 banks for a period of fifteen (15) years, i.e., from 1994 to 2011. Bose and Mendonça et al. (2017) applied thirty (30) banks from Bangladesh as a sample for six years, i.e., from 2009 to 2014. Furthermore, Pepur (2012) evaluated 16 banks in Macedonian for six (6) years, i.e., from 2005 to 2010, Silva (2018) examined banks from the year 2001 to 2015, and Growe, DeBruine, Lee, and Tan (2016) employed 41 Chinese banks data for nine (9) years from 2003 to 2011. Ramlan et al. (2015) used 101 sampled banks from the Republic of China from year 2003 to 2009, whereas Zouari-corbel (2014) applied 16 (sixteen) banks in Tunisian for a seven (7) year period, i.e. from 2003 to 2012,

However, it should be appreciated that little has been studied about bank performance in the Tanzanian context, and as such, among the few studies that have been carried

out include, Aikael (2008), Aminiel (2013), Lwiza and Nwanko (2002), Loto (2017) and Mkaro (2011). However, none of the studies have discussed the influence of the Treasury Single Account (TSA). On top of that, very few among these studies have categorized banks in terms of ownership, size, and other bank-specific characteristics and external factors affecting banking sector performance in Tanzania. That being the case, sampled banks were analyzed based on their classifications, bank-specific characteristics, external variables, and the moderating effect of the treasury single account.

3.4.2 Data Collection Instruments

The present study applied secondary data; hence, data was collected from the Central Bank of Tanzania publications, commercial banks' annual reports, the National Bureau of Statistics (NBS), and numerous databases of commercial banks for eleven years from 2010 to 2020. Dawson (2009) describes secondary data research as the collection of data from studies of other researchers in a similar study or area. On the other hand, Ember and Ember (2009) define secondary data as data collected by a third party. In light of the preceding, the study used published financial statements quarterly for all institutions that were in existence from 2010 to 2020, including those that had merged within the period under review.

3.4.3 Data Collection Procedures

The study used secondary data, as pointed out above, whereby the Central Bank of Tanzania (BOT) publications, commercial banks' annual reports, and National Bureau of Statistics (NBS) publications were the primary sources for data collection. The

Central Bank of Tanzania is the regulatory and supervisory body of all banking institutions in Tanzania and is responsible for licensing and confiscating banking licenses. Information gathered from the Bank of Tanzania (BOT) regarding commercial banks can be trusted. Among other things, BOT requires all banking institutions to publish audited financial statements. On top of that, these published financial statements must be audited by an independent external auditor before publication, enhancing the reliability of these published accounts. Furthermore, BOT conducts an independent audit/examination of all banking institutions, thus improving the reliability of the published audited financial statements. Numerous accounting ratios were computed to measure bank performance.

3.5 The Research Variables

The empirical model above highlights three research variables: moderating, dependent, and independent. These variables are highlighted below based on the agency, efficiency, institutional, and stakeholders' theories.

3.5.1 Treasury Single Account (Moderating Variable)

A Treasury Single Account (TSA) is a bank account that provides a consolidated position of government cash resources in an explicitly unified structure. In this regard, TSA represents a bank account or set of interlinked bank accounts that transact all government cash receipts and payments in line with the requirements of unity of cash and the unity of treasury principle (IMF, 2010). The Treasury Single Account (TSA) serves as a framework to enhance the management of government cash resources, specifically in revenue collection and payments. It gives a solution to the Financial

Management Information System. Such a centralized system enhances control of government expenditure (Oyedebe, 2015)

Adeolu (2015) also defined TSA as a single account monitored and controlled by the country's central bank, with the view of collecting and spending government cash resources while ensuring transparency and avoiding exploitation of the same through the application of the robust system of public accounting. In light of the preceding, TSA enhances proper financial management through regular reconciliation of all government cash receipts and payments while overcoming the practice of holding idle funds in commercial banks.

In response to a global practice, TSA is generally recommended to provide the oversight role such that all government ministries and agencies are bound to operate bank accounts in line with the requirements of the treasury. As a government's chief financial agent, the treasury must ensure the availability of sufficient funds to manage the government's cash and debt positions by meeting maturing financial obligations while efficiently investing the government's idle money. The treasury should ensure that debts are optimally issued in line with relevant statutes (Agbe et al., 2017)

Despite TSA's importance from a global perspective, it has been revealed that, so far, few studies have attempted to study the impact of TSA on bank performance. To the researcher's knowledge, the most recent studies have been done in Nigeria. In this regard, this study is of value to Tanzania, especially to policymakers, bank management, investors, and researchers. Oyedele et al. (2018) used the stakeholder's

theory with time series data and the ordinary least square method to study TSA's impact on Nigeria's banking sector performance. It was found that the Treasury Single Account has negatively affected banks' liquidity positions, deposit mobilization, employment creation, saving culture, and the overall performance of Nigeria's banking sector. Another study by Andornimye (2017) that used the same stakeholder's theory in conjunction with time series data came up with the findings that Banks' working capital has declined significantly, impairing banks' ability to meet short-term maturing obligations. The results also revealed that TSA has, on the other hand, encouraged banks' deposit mobilization but has little effect on banks' credit creation ability. It is also imperative to know that results on TSA's impact on bank performance have been inconclusive. Oyedebe et al. (2018) used the Ordinary least Square method to study banking sector performance in conjunction with the Treasury Single Account (TSA) model. The results contradicted the study by Olaoye and Talabi (2019), which found that TSA positively impacted bank performance.

In contrast, the study by Oyedebe et al. (2018) found that introducing the Treasury Single Account Model (TSA) system negatively impacted banks' liquidity positions due to challenges in deposit collection and saving attitude. Ultimately, these have impacted employment, and the Nigerian banking sector's performance as a whole has been negatively affected. As TSA is a new practice in Tanzania's government, the study was worth exploring how TSA affected bank performance in Tanzania.

This study applied the Treasury Single Account model as a moderating variable. Tanzania embarked on a wholesale adoption of TSA in January 2016. Since its

inception, commercial banks have been struggling to change how they do business due to government withdrawal and transfer of cash resources from commercial banks to BOT. In this regard, ownership concentration, bank-specific characteristics, and industry and country-wide variables were examined to check how influential they are on the eleven-year performances, i.e. before TSA, i.e. (2010 to 2016) and after TSA, i.e. (2016 to 2020).

3.5.2   Dependent Variable (Bank Performance)

Generally, bank performance is widely measured using accounting and financial analysis and market measurement criteria (Munisi and Randoy, 2013). This study followed suit by using financial analysis in a holistic approach by employing accounting and CAMELS ratios to measure bank performance.

Several studies have used financial performance as an indicator of bank performance. Most of these studies have widely applied variables such as ROA, ROE, and NIM (Basuony & Ehab, 2018; Ferrerob & Sánchez, 2018; Ghosh, 2018; Maingi, 2019; Mertzanis, Narwal & Pathneja, 2016; Wambugu & Koori, 2019). On top of that, the CAMELS model is another indicator of bank performance. It is a widely used model by central banks worldwide to rate the financial soundness of banking institutions. The Central Bank of Tanzania has also adopted the CAMELS model to measure bank performance (Aminiel, 2013; Madishetti, 2013; Mkaro, 2011). Under this model, the analysis of all banking institutions is uniformly and comprehensively evaluated such that supervisory concern is placed on those institutions that have recorded an adverse performance trend or have demonstrated weaknesses in operations and financial

conditions, such as attracting regulatory attention (BOT RBS Framework, 2010). Generally, few studies have attempted to apply the CAMELS model to measure bank performance as far as the researcher is aware, there is also a worldwide knowledge gap on how the CAMELS rating is calculated, because a significant number of studies that have attempted to use the CAMELS model have not performed the CAMELS rating. Most have merely analyzed and discussed CAMELS ratios, such as making a gap in the body of knowledge in the final CAMELS rating. Examples of those studies that have applied CAMELS ratios without computing the final CAMELS rating are Dinku (2018) and Madishetti (2013). The present study has, therefore, addressed this gap by applying the CAMELS rating to measure bank performance. It should also be appreciated that most previous studies have used traditional profitability ratios to measure bank performance. As such, the result of the present study opens the doors for other researchers to familiarize themselves with the CAMELS rating system to measure bank performance.

Though being the most critical driver of bank performance, management performance has not been given exceptional attention by researchers regarding bank performance. The ratio of cost to income is widely applied to measure management performance. A literature review reveals little about banks' management performance has been discussed. Those studies that have attempted to discuss the same have applied CAMELS ratios, of which little attention is given to management performance. Given the preceding, the present study seeks to address this gap by stimulating discussion on banks' management performance to contribute to the body of knowledge on this vital

aspect of bank performance. Herein below is a summary of each category of bank performance.

a) Financial Performance

According to a review of previous research, ROA and ROE are the most commonly utilized financial metrics, as demonstrated by the studies by Guerreiro and Garcia (2016), Naeem et al. (2017), Pathneja (2016), Sharma and Singh (2016), Tabash (2018), Tiberiu (2015) and Zampara et al. (2017). The present study, however, measured financial performance using three indicators, namely Return on Equity or Shareholders Fund (ROE), Return on Assets (ROA), and the Net Interest Margin (NIM). It should be remembered that ROA tests the bank's management's ability to deploy its assets to make a profit, while the return or profit to be distributed to the owners is measured by return on equity (ROE) (Brahmaiah and Ranajee 2018). The net interest margin (NIM) measures the worthiness of income that the bank derives from the loans (Kristianti and Tarumanagara 2016). As the bank does financing business, it shall determine its income through interest earned from the loans. The bank's management ability to create and manage claims tends to affect the bank's profit (Rani and Zergaw, 2017; Saif, 2014).

(b) Regulatory Performance Measure Using the CAMELS Model

As pointed out above, this study covered eleven years, from 2010 to 2020. Banks' regulatory performance was measured using the CAMELS model. The model is generally accepted as a standard system for analyzing bank performance worldwide. Central Bank of Tanzania also uses the CAMELS model to analyze the financial

soundness of banking institutions operating in Tanzania. Through the CAMELS model, all banking institutions operating in Tanzania are analyzed comprehensively and uniformly. The focus and supervisory consideration are put on institutions that have demonstrated financial and operational challenges. Deteriorating banks are also identified using the CAMELS analysis, and specific components that have caused such deterioration are identified accordingly. In view of the preceding, institutions can focus on particular areas that put them in financial and operational challenges. As such, BOT's role of ensuring the strength and financial soundness of banking institutions can be achieved (BOT-RMGS, 2010). CAMELS model consists of the following components, as summarised in Table 3.2.

Table 3. 2:   CAMELS Model Components

CAMELS Component	Definition and Selected CAMELS Ratios	
Capital Adequacy	Banks' capital is considered a shock absorber to absorb unforeseen financial risks. The risks may include interest, credit, exchange, and operational risks. A strong capital base provides a hedge against these risks, such as keeping depositors' money safe. In this study, the following capital adequacy ratios were tested:-	
	Selected Ratios	**Weight**
	1. Core Capital /TRWA+OBSE	40%
	2. Core Capital /Total Assets	40%
	3. Total Capital/TRWA+OBSE	20%
Asset Quality	Bank debtors are essential factors to consider regarding the quality of the bank's assets. Banks are encouraged to establish the extent of the loan losses in case the loans turn into the non-performing category. By so doing, banks can understand the importance of the funds reserved to serve the bank in case of bad or non-performing investments. In this study, the following ratios were tested:-	
	Selected Ratios	**Weight**
	1. NPLs /Gross Loans	40%
	2. Loan Loss Reserve/Gross Loans	20%
	3. NPLs net of Provisions/Core Capital	40%
Management Capability	The bank's soundness lies in the capability of the management to smoothly and skilfully safeguard bank operations as far as cost reduction and profit maximization through an increase in productivity are concerned. The cost/ total income ratio has been widely used to measure management capability. However, in this study, the following ratios were tested:-	
	Selected Ratios	**Weight**
	1. Total Assets Growth Rate	40%
	2. Loans Growth Rate	20%
	3. Earnings Growth Rate	40%
Earnings	The earnings level of a bank defines the financial performance of an organization. The quality of earnings depends on the profitability and general bank's productivity. Activities like dividend payments, investment opportunities, boosting up capital, and keeping the bank in a competitive position rely on the bank's ability to make a profit. In this study, the following earnings ratios were tested:-	
	Selected Ratios	**Weight**
	1. Return on Average Assets	40%

CAMELS Component	Definition and Selected CAMELS Ratios	
	2. Net Interest Income to Average Earning Assets	30%
	3. Non-Interest Expenses to Average Assets	30%
Liquidity	A bank's ability to honor its maturing obligations depends upon its liquidity position. If the banks face liquidity shock, the situation worsens as the bank won't be able to meet its current short-term obligations. Sound liquidity is needed for sound banking strategic and operational stability. Cash and cash equivalents are dependable running assets for the bank. A bank's liquidity stance is adequate if it can quickly turn its non-cash assets into cash or raise liabilities. In this study, the following liquidity ratios were tested:-	
	Selected Ratios	Weight
	1. Core Deposits to Total Deposits	40%
	2. Liquid Assets to Demand Liabilities	20%
	3. Gross Loans to Total Deposits	40%
Sensitivity to Market Risk	This is associated with the risk that the adverse movement of foreign exchange rates and interest rates might negatively affect the bank's profitability and capital. This is also an essential variable in measuring bank performance.	
	Selected Ratios	Weight
	1. Interest Income to Total Income	50%
	2. Income From Foreign Exchange Trading /to Total Income	50%

Source: Ahsan (2016), Aminiel (2013), BOT (2010), Chatzi et al. (2015), Tiisekwa (2013), Khan (2008), Mkaro (201), Pastory (2020), Pastory and Qin (2012) and Rostami (2015).

Notably, some additional parameters have been selected using the researcher's professional judgment. This judgment is based on worldwide best practices drawn from the highlighted references in Table 3.2 above.

Measuring the Composite CAMELS Rating

The composite rating is assigned to each institution in light of the ratings of all the essential CAMELS components to assess the financial and operational conditions. In this regard, the assessment of the adequacy of assets and capital, earnings level,

management capability, and sensitivity to market risk must be thoroughly examined. BOT, Risk Management Framework (2010). In coming up with the final composite rating, the level of the institution's sophistication, the size of the bank, the overall risk profile, and the complexity of an institution's operations must be considered. The composite and an individual component's final ratings are numerically based on a scale of 1 to 5. Table 3.3 highlights the rating scales, and their implications are highlighted below.

Table 3.3:   Composite CAMELS Rating

Rating Scale	Composite Rating
1	Strong
2	Satisfactory
3	Marginal
4	Unsatisfactory
5	Critical

Source: Ahsan (2016), Aminiel (2013), BOT (2010), Chatzi et al. (2015), Tiisekwa (2013), Khan (2008), Mkaro (201), Pastory (2020), Pastory and Qin (2012) and Rostami (2015).

Meaning and Interpretation of Composite CAMELS Rating

Several studies and documentaries have highlighted the meaning and interpretation of the above composite CAMELS ratings. Examples of these studies include the analysis by Ahsan (2016), Aminiel (2013), BOT (2010), Chatzi et al. (2015), Tiisekwa (2013), Khan (2008), Mkaro (2011), Pastory (2010), Pastory and Qin (2012) and Rostami (2015). As such, composite rating:1 to 5 can be explained as follows:-

    i.   Composite Rating 1 (Strong)**:** This is the highest numeric rating implying that the institution demonstrates:-

        • Strong performance in every aspect

- Strong risk management and governance practice

- Low level of supervisory concern and actions

- Ability to resist external financial and economic shocks.

- Examination or audit findings exhibit a minor or low nature, which can be controlled routinely.

ii. Composite Rating 2 (Satisfactory): This is the second high numeric rating implying that the institution demonstrates the following:-

- Essentially sound.

- Examination or audit findings exhibit a minor or low nature, which can be controlled routinely.

- Stability and ability to withstand any business variations.

- Supervisory concerns are limited to the extent that examination findings or areas of concern are corrected.

iii. Composite Rating 3 (Marginal): This is the third numeric rating implying that the institution demonstrates the following:-

- Financial conditions, compliance, and operational weaknesses range between moderately difficult and unsatisfactory situations.

- We are exposed to the risk of starting to experience unfavorable business conditions.

- Quickly worsen if corrective actions are not active in addressing the weaknesses.

- Serious supervisory concerns and measures to be instituted above the regular supervision practices to correct deficiencies are required.

iv. Composite Rating 4: (Unsatisfactory)**:** This is the fourth numeric rating implying that the institution demonstrates the following:-

- The excessive level of severe financial and operational weaknesses.

- Unsafe and specious conditions may exist without being satisfactorily corrected.

- Without severe and reasonable corrective actions, these worse-case conditions could grow further and damage upcoming feasibility.

- There is potential for financial and operational calamities.

- Close on-site and off-site surveillance and a practical plan for rectifying deficiencies are needed.

v. Composite Rating 5: (Critical): This is the lowest numeric rating implying that the institution demonstrates the following:-

- Weakest or worst performance

- Inadequate levels of risk management behaviors and practices

- Highest and most profound degree of supervisory concerns and corrective actions.

- The management's capability or willingness is below the problem's volume and sternness.

- Liquidation may be the only option if no immediate measures are undertaken to correct the anomalies. Merger or institutional acquisition can be the best alternatives to liquidation.

The final CAMELS composite rating is closely associated with the ratings on individual CAMELS components. The ratings require quantitative and qualitative analysis of all relevant factors encompassing each CAMELS component. Technically, the final rating is not a matter of an arithmetic average but the worst rating in any of the CAMELS components (BOT, 2010). A review of past studies revealed that most studies had adopted a standard approach of assigning CAMELS components to develop the composite CAMELS rating. Insiya (2017) argues that the CAMELS rating system applies in the USA and almost every jurisdiction and that all banks are assessed using this system. The USA National Credit Union adopted the system in 1987; the following year, in 1988, the Basel Committee on Banking Supervision proposed and adopted the CAMELS model. Therefore, the composite CAMELS rating is a combination of rating scales 1 to 5 in conjunction with the assigned weights on each CAMELS component. Capital Adequacy is a weight of 20%, Asset Quality is a weight of 20%, Management capability is a weight of 25%, Earnings a weight of 15%, Liquidity a weight of 10%, and Sensitivity to a market risk weight of 10%. Other studies that have applied the weights mentioned above in computing the composite CAMELS rating include the studies by Bastan and Mazrae (2016), Parveenbari (2010), and Tiisekwa (2013). The present study also used these assigned weights to add value to the body of knowledge, especially to practitioners, regulators, and researchers worldwide.

According to the BOT Risk Management Framework (2010), the overall risk profile of a banking institution lies in the management's ability to respond to varying circumstances and correct the risk that may arise due to a dynamic business environment. As such, there is a rationale for assigning a higher weight to the management capability component, as observed in the studies by Bastan and Mazrae (2016), Insiya (2017), Parveenbari (2010), and Tiisekwa (2013). All CAMELS components must be closely watched to ensure the overall financial soundness of the institution is achieved. Table 3.4 shows CAMELS components, each tagged with rating scales, and the associated weights for composite computing rating on each CAMELS component.

Table 3. 4:   CAMELS Components with Assigned Ratings and Weights

The following Keys are important: CC=Core Capital, TC=Total Capital, TA=Total Assets, TRWA=Total Risk-Weighted Assets, NPLs=Non-Performing Loans, LLR=Loan Loss Reserve, NPL NOP/CC= NPLs net of Provisions to Core Capital.

CAMELS Rating Components	Weight	CAMELS RATIOS	Rating				
			1	2	3	4	5
			%	%	%	%	%
Capital Adequacy	40%	CC/RWA+ OBSE	> 16	14 – 16	12 – 14	10 - 12	< 10
	40%	Core Capital to TA	> 12	9 – 12	6 – 9	3 - 6	< 3
	20%	TC/TRWA+OBSE	> 18	16 – 18	14 – 16	12 - 14	< 12
Asset Quality	40%	NPLs /Gross Loans	< 5	5 – 10	10 – 15	15 - 20	> 20
	%20	LLR/Gross Loans	< 2	2 – 4	4 – 6	6 - 8	> 8
	%40	NPL Net of Provision/CC	< 20	20 – 30	30 – 40	40 - 50	> 50
Management Capability	40%	Total Assets Growth Rate	> 25	20 – 25	15 – 20	10 - 15	< 10
	20%	Loans Growth Rate	> 40	30 – 40	20 – 30	10 - 20	< 10
	40%	Earnings Growth Rate	> 40	30 – 40	20 – 30	10 - 20	< 10
Earnings	40%	Return on Average Assets	> 3	2 – 3	1 – 2	0 - 1	< 0
	30%	Net Interest Income to Average Earning Assets	> 5	3 – 5	1 – 3	0 - 1	< 0
	30%	Non-Interest Expenses to Average Assets	< 4	4 – 8	8 – 12	12 - 16	> 16
Liquidity	40%	Core Deposits to Total Deposits	> 80	60 – 80	40 – 60	20 - 40	< 20
	20%	Liquid Assets to Demand Liabilities	> 40	30 – 40	20 – 30	15 - 20	< 15
	40%	Gross Loans to Total Deposits	< 70	70 – 75	75 – 80	80 - 85	> 85
Sensitivity to Market Risk	50%	Interest Income/Total Income	<75	75-85	85-95	95-97	97-100
	50%	Income From Foreign Exchange Trading / to Total Income	<20	30-40	40-60	60-80	80-100

Source: Ahsan (2016), Aminiel (2013), BOT (2010), Chatzi et al. (2015), Tiisekwa (2013), Khan (2008), Mkaro (201), Pastory (2020), Pastory and Qin (2012) and Rostami (2015).

Moreover, some parameters have been selected using the researcher's judgment based on the worldwide best practices drawn from the highlighted references in Table 3.4.

(c) Management Performance

Management performance is one of the bank performance measurement indicators. The performance of management is measured based on its capability to smoothly and skillfully safeguard bank operations as far as cost reduction and profit maximization through an increase in productivity are concerned. The quality of management depends not only on a bank's financial performance but also on other qualitative factors such as experience and competence of management and the level of education. When evaluating management performance, it proves challenging to assess it in comparison to other financial variables (BOT, 2010). A review of previous studies revealed that the cost/ total income ratio had been widely used to measure management performance (Ahsan, 2016).

Using one hundred eighty-one (181) samples of large banks in fifteen (15) European countries, the study by Iannotta et al. (2007) revealed numerous issues. A higher level of bank capitalization might be reflected in a higher level of management performance and thus bring about minimal cost and attractive income, eventually generating attractive profits. Management's ability to cut costs and maximize profit can define the competence level of a bank's management. This is measured using (CIR), i.e., the cost-to-income ratio (Getahun, 2015). Management capability is essential and contributes significantly to the bank's success (Grier, 2007; Mishra and Aspal, 2012). The operational cost-to-income ratio informs the management about its efficiency in

managing the cost of generating income (Getahun, 2015). In addition, the Cost to Income Ratio (CIR) technique has also been applied by Olweny et al. (2011) in their study about measuring Kenya's banks' operating efficiency.

It was revealed that weak operational cost efficiency management results in poor bank profitability. The present study also adopted the cost-to-income ratio to examine management performance. Since the Central Bank of Tanzania does not use this ratio to evaluate management performance, the findings of this study add value to the Central Bank of Tanzania, commercial banks' management, and researchers. It should be appreciated that BOT evaluates commercial banks' management performance qualitatively (BOT-RBS Framework, 2010). Hence, CIR can be adopted as an additional criterion in the regulatory and supervisory framework used by BOT to evaluate commercial banks' soundness.

3.5.3 Independent Variables

The conceptual framework in Figure 3.1 explains three categories of independent variables. A literature review revealed several studies on bank performance categorize explanatory variables in several ways. Similarly, the present study draws insight from the literature such that the study's explanatory variables were organized in three ways. The first category is ownership concentration, which tests the influence of domestic and foreign and state-owned and private banks on bank performance in Tanzania. The second category concerns bank-specific factors, which explain the stimulus of size, exposure to liquidity position, and risks associated with credit on bank performance.

In contrast, the third category shows the influence of industry and country variables on bank performance. The industry and country variables are a proxy for macroeconomic variables, including inflation levels, GDP growth, lending Interest rate, and exchange rate. These are detailed below.

(a) Ownership Concentration

In light of the OECD criteria, ownership concentration depends on the influence of shareholdings that defines the extent of control. Different jurisdictions have different definitions of what constitutes controlling shareholders. Generally, the level of control could vary from above certain specific levels ranging from thirty per cent or above of the voting shares. To institute control, the largest shareholders are the ones who control the affairs of the institution, and by their controlling influence, all management decisions rest in their hands (OICU-IOSCO 2009). According to BPP (2019) and CMSA (2002), majority shareholders have been defined as those who hold above fifty per cent (50%) of the company's shares. In this study, ownership was discussed in line with two classifications. The first classification paired state-owned and private banks, while domestic and foreign banks were paired separately.

The 2018 Annual Report on Financial Institution Supervision by the Bank of Tanzania (BOT) indicates that among the 53 banking institutions in operation within Tanzania, foreign banks hold a predominant position. Specifically, out of the total 53 banks, 30 banks are foreign-owned, constituting 57% of the entire banking sector. In contrast, the rest, 23 (43%), are domestically owned. On the other hand, 48 of these banks are privately held, which accounts for 91% of all banks. In contrast, only five banks, i.e.

(9%), represent state-owned banks such that two (2), i.e. (4%), represent development banks which were excluded from this study, and the other three banks, i.e. (5%), are commercial banks. This study used 30 banking institutions that were in existence from 2010 to 2020, including the merged institutions during the period under review. A comparative performance before and after TSA adoption was applied. Foreign banks were compared to domestic banks, whereas state-owned banks were compared to private banks before and after TSA adoption.

(b) Bank Specific Characteristics

Bank-specific characteristics are factors that can directly influence the overall results of the bank's managerial decisions (Louzis et al., 2012; Rjoub et al., 2017; Saona, 2016; Singh and Sharma, 2016). Past studies revealed two or three ways of categorizing bank performance determinants. Studies by Altamimi (2010), Petriaa, Caprarub, and Ihnatov (2015) and Wambugu and Koori (2019) ordered factors determining bank performance into two categories. Internal factors (i.e. bank-specific factors) and external factors (i.e. macroeconomic variables, which stand as a proxy for industry and country-wide variables). Specific bank characteristics are the internal factors that affect banking institutions' performance. Senior management and board oversight largely influence these internal factors.

On the other hand, sector and country-wide factors are categorized as external factors, as they are beyond the scope of the company's control. These external factors may directly or indirectly affect banks' profitability. Maingi (2019) described bank characteristics regarding board composition, Bank Size, and ownership structure. In

this regard, bank characteristics can be defined as distinctive topographies that form a banking internal operating structure and may include but are not limited to factors such as ownership, age, size, risk, geographical concentration, and board composition. In this regard, bank characteristics can be precisely described as banks' specific or internal features that may influence banks' performance. The present study described bank characteristics regarding two main sub-categories: banks' size and financial risks. The latter was discussed with credit and liquidity risks.

(i) **Bank Size**

Banks' total assets have widely been used as a proxy for bank size. Several studies have been observed to use bank assets to represent bank size. Former studies had reported a positive effect between bank size and the performance of banking institutions (Acaravci and Çalim, 2013; Aminiel, 2013; Bougatef, 2017; Chowdhury and Rasid, 2017; Masood and Ashraf, 2012; Petria et al., 2015 and Singh and Sharma, 2016). However, studies by Gul et al. (2011) and Singh and Sharma (2016) reported a negative influence of bank size on banks' performance. The present research also used banks' total assets to classify banks into large versus small and medium-sized banks. BOT–Directorate of Financial Institution Supervision Annual Report of 2018 shows that out of 53 banking institutions operating in Tanzania, ten (10) institutions, i.e. (19%), are categorized as large banks in terms of total assets held. In contrast, the remaining 43 (81%) fall under small and medium banks, including community and microfinance banks. This study used 30 banking institutions that were in existence from 2010 to 2020, including the merged institutions during the period under review. A comparative performance before and after TSA adoption was applied.

(ii)   **Financial Risk**

According to Badawi (2017), banking institutions are prone to seven risks: credit risk, liquidity risk, operational risk, market risk, strategic risk, reputation risk, and legal risk. Bird and Skinner (2005) affirm that three financial risks, liquidity risk, credit risk, and interest rate risk, strongly impact financial institutions' conduct. It should be appreciated that banks are vulnerable to numerous risks which are closely related (Hanim et al. 2009). The present study discussed two financial risks, namely liquidity and credit risk. Interest rate risk was discussed as a proxy for the industry-specific variable as it is more inclined toward macroeconomic variables.

- **Liquidity risk**

    Liquidity risk occurs when the bank fails to pay its maturing obligations from its financing sources or from liquid assets with a high quality of being mortgaged while maintaining the stability of the bank's financial condition. On the other hand, liquidity risk arises due to the bank's inability to convert liquid assets into cash due to adverse fair market prices that may subject the assets to a significant discount, such as impairing the assets' value (Badawi, 2017). The gross loan ratio to total assets or total funding was used as a proxy for liquidity risk. Using total assets in the denominator checks the bank's assets' ability to be liquidated to get funds to honor any maturing financial commitments (Casu et al., 2016). Due to the preceding, the higher the liquidity risk, the lower the expected efficiency level (Fernandes et al., 2018). Best practice categorizes liquidity risk judgmentally in the following levels. Low risk is when the ratio of loan to total funding is below 50%, while moderate risk lies between 50%

and 60%, significant risk lies between 60% and 80%, and any above 80% represents a high risk. The Tanzania Central Bank similarly applies this criterion in assessing commercial banks' liquidity risk. The present study followed suit by using the ratio of loans to total deposits as a proxy for liquidity risk.

- **Credit risk**

Credit risk arises due to the borrower's inability to pay its maturing commitments to the bank. Since credit performance largely depends on the borrower's or the issuer's performance, the credit risk element will always be there (Badawi, 2017). Numerous ratios are used to measure credit risk. According to Fernandes et al. (2018), loan reserve to gross loan has been used to represent credit risk. However, non-performing loans to gross loans (NPL ratio) is one of the key ratios used by various scholars to measure the bank's credit risk. Examples of studies that have used NPL to measure credit risk include Ibrahim and Rizvi (2017) and Kutubi et al. (2017). Earlier researchers assert that low profitability is recorded due to high credit risk (Fernandes et al. 2018). Banks' efficiency and credit risk have a negative association in this regard. Best practice categorizes credit risk judgmentally in the following levels. Low risk is when the ratio of NPL to Gross loans is below 5%, while moderate risk lies between 5% and 7%, significant risk lies between 7% and 10%, and any ratio above 10% represents a high risk. The Tanzania Central Bank similarly applies this criterion in assessing commercial banks' credit risk. The present study also followed suit by using the ratio of NPL as a proxy for credit risk.

(c) Industry-Specific and Country-Wide Variables

These are the macroeconomic variables that may affect bank performance in several ways. These variables are also known as external factors or variables that may influence bank performance, and they may either have a direct or indirect association with the performance of the banking sector Maingi, N. (2019). Several studies have used interest, inflation, GDP growth, and exchange rates as external factors affecting bank performance. Ranajee (2018) and Mujuka (2018) have applied GDP, inflation rate, and interest rate as external factors (microeconomic variables) affecting bank performance. In contrast, Combey and Togbenou (2017) have incorporated the exchange rate as an additional micro-economic variable affecting bank performance in addition to GDP, inflation, and interest rate. A summary of other studies includes (Chowdhury and Rasid, 2017; Combey andTogbenou, 2017; Menicucci and Paolucci, 2016; Rashid and Jabeen, 2016 and Yahya et al., 2017). Table 3.5 summarises them all. The present study follows suit by applying these (macroeconomic variables), i.e., industry and country-wide variables. The present study discussed the four industry and country-wide variables: inflation, GDP growth rate, average exchange rate, and bank lending rate.

i.   Inflation

Inflation represents a general price increase of various goods and numerous services. It also reflects the currency's purchasing power (Singh and Sharma, 2016). It should be appreciated that the association between inflation level and the overall bank performance is a long-term concept. This association was hosted in economic theories for the first time by Revell (1979). It should be appreciated that, since its inception,

several studies have used inflation to measure bank performance. Examples of these studies include but are not limited to the following (Chowdhury and Rasid, 2017; Masood and Ashraf, 2012; and Bertin, Moya and Perales, 2014). According to the theory introduced by Revell (1979), banking institutions' profitability is highly affected by the impact of inflation on overheads, particularly on salaries and other operating overheads. An increase in the inflation rate may cause an increase in wages and other operating overheads, which may eventually erode the profit. However, the bank's management can foresee the impact of inflation in advance and, therefore, take necessary measures to adjust the lending interest rate to cover an increased inflation rate. In that case, the bank can still make an attractive profit (Trujillo-Ponce, 2013). The present study used quarterly inflation rates to measure the influence of price level changes on bank performance.

ii.   GDP Growth

Theories suggest that the growth of GDP in the real term has a positive impact on the overall bank performance. It increases net interest income, reduces NPLs or loan losses, and stimulates the cutdown of operating costs (Bolt et al., 2012; Combey & Togbenou, 2017; Jimnez et al., 2009). The profitability of many institutions improves whenever there is an economic expansion, and during a recession, profit declines. In light of the above, as GDP grows, deposit mobilization and lending activities improve, such as decreasing loan losses and, eventually net interest margin and profit. On top of that, an increase in GDP positively impacts raising people's disposable income, promotes employment, and lowers NPLs. In general, it can be suggested that bank performance and GDP are cyclical (Combey and Togbenou, 2017). Several studies

have used GDP as one of the common factors to measure the overall aggregate economic activities in the country's economy (Francis, 2013; Ongore and Kusa, 2013; Petria, Capraru, and Ihnatov, 2015; Rani and Zergaw, 2017; Saona, 2016; and Singh and Sharma, 2016). This study used quarterly GDP growth rates to check their influence on bank performance.

iii.   Exchange Rate

Combey and Togbenou (2017) pointed out that a bank's operational activities are more likely exposed to the risk of an adverse movement of exchange rates due to changes in assets' and liabilities' values. Moreover, any unfavorable exchange rate movement can directly affect banks with foreign transactions or foreign operations, such as foreign branches or foreign subsidiaries. Similarly, a local currency depreciation positively impacts the overall bank performance as it promotes local production and attracts demand for local products in foreign countries due to the fall in the price of our locally produced goods. Consequently, the move will attract exportation by promoting a foreign currency flow in the country. In this regard, customer deposits and lending activities will increase profitability. Studies by Paolucci and Menicucci (2016) and Rasid and Chowdhury (2017) emphasized that the scrutiny of the foreign exchange rate is a crucial factor in measuring banks' profitability. It should be appreciated that those banks with foreign currency-denominated assets and liabilities are more exposed to the exchange rate risk. Few studies in Tanzania have attempted to study the impact of exchange rates on bank performance.

Therefore, The present study explored the association between the variables above using the quarterly average exchange rates.

iv.   Interest Rate

A mixture of results has been reported in previous studies to explain the influence of interest rates on the overall performance of banks. While Yahya et al. (2017) reported a positive association between interest rate and bank performance, Rashid and Jabeen (2016) found a negative association between interest rate and bank performance. In this regard, the present study explored how these two variables are interrelated. This study used the quarterly lending interest rate that a bank gains from loans by measuring its influence on bank performance.

Table 3. 5: Summary of the above Study Variables

(a) Dependent variables

Dependent Variables			
Variables	**Indicators or Acronym**	**Formula**	**Evidence from Literature**
Bank Performance — Financial Performance	ROA	$$\frac{Net\ Profit\ After\ Tax}{Average\ Assets}$$	Al-Homaidi 2018; Brahmaiah and Ranajee, 2018; Guerreiro and Garcia, 2016; Naeem et al., 2017; Pathneja,2016; Sharma and Singh, 2016; Tabash M., 2018; Tiberiu, 2015 and Zampara et al., 2017;
	ROE	$$\frac{Net\ Profit\ After\ Tax}{Average\ Equity}$$	
	NIM	$$\frac{Net\ Interest\ Income}{Total\ Asset}$$	(Al-Homaidi 2018; Kristianti and Tarumanagara 2016; Rani and Zergaw, 2017; Saif, 2014)
Bank Performance — Regulatory Performance	CAMELS	Composite CAMELS Rating	Ahsan 2016; Aminiel 2013; BOT 2010; Chatzi et al. 2015; Tiisekwa 2013, Khan, 2008; Mkaro 2011; Pastory 2010; Pastory and Qin, 2012 and Rostami 2015
Bank Performance — Management Performance	Cost to Income	Operating cost/Income	(Ahsan 2016; Getahun, 2015; Grier, 2007; Mishra and Aspal, 2012; Olweny et al 2011)

Source: Researcher's compilation from the literature

(b) Independent Variables

Independent Variables					
Variables	**Indicators or Acronym**	**Operationalization of Variables**	**Expected Effect**		**Evidence from Literature**
			Before TSA	**After TSA**	
Ownership Concentration	Domestic Banks	Bank Performance: *-Financial perf. -Regulatory perf. -Management perf.*	+	-	(Barth et al., 2004; Belousova et al, 2019; Ghosh, 2018; Iannotta et al, 2007; Konaraa et al 2019; La Porta et al., 1998; Lea et al, 2019; Ozili and Uadiale, 2017; Wanke et al 2019 and Zouari and Taktak 2012)
	Foreign Banks	Bank Performance: *-Financial perf. -Regulatory perf. -Management perf.*	+	+	
Bank Size	Large banks	Bank Performance: *-Financial perf. -Regulatory perf. -Management perf.*	+	-	(Amininiel, 2013; Avramidis et al., 2018; Mkaro, 2011; Mokhamad, 2018; Raziab, 2019; Seyed et al., 2019; and Wanke et al., 2019)
	Small banks	Bank Performance: *-Financial perf. -Regulatory perf. -Management perf.*	-	-	
Financial Risk	Liquidity risk	Gross Loan/Total Funding	+	-	(Badawi, 2017; Casu et al., 2016; Fernandes et al 2018; Ibrahim, and Rizvi 2017; Kutubi, Ahmed and Khan 2017; and Yahya et al., 2017)
	Credit risk	NPL/Gross Loans	+	-	
Industry and Country Variables as a proxy for (Macroeconomic Variables) — Gross Domestic Product	GDP	Quarterly GDP Growth Rate	+	-	(Bolt et al., 2012; Capraru and Ihnatov, 2015; Combey and Togbenou, 2017; Francis, 2013; Jiménez et al., 2009; Ongore and Kusa, 2013; Petria, Rani and Zergaw, 2017; Saona, 2016; and Singh and Sharma, 2016)
Industry and Country Variables as a proxy for (Macroeconomic Variables) — Inflation	INFL	Quarterly Inflation Rate	+	+	(Bertin, Moya, and Perales, 2014; Chowdhury and Rasid, 2017; Masood and Ashraf, 2012; Revell,1979; Singh and Sharma,

Independent Variables					
Variables	Indicators or Acronym	Operationalization of Variables	Expected Effect		Evidence from Literature
			Before TSA	After TSA	
					2016 and Trujillo-Ponce, 2013)
Exchange Rate	EXCH	Quarterly Average Exchange Rate	+	+	(Chowdhury and Rasid, 2017; Combey and Togbenou, 2017; and Menicucci and Paolucci, 2016)
Interest Rate	INT	Average Lending Rate	+	+	(Rashid and Jabeen 2016; Yahya, et al 2017)

Source: Researcher's compilation from the literature

(c) Moderating Variables

Moderating Variables					
Treasury Single Account	TSA	Influence of TSA on Bank Performance	+	-	(Andornimye, 2017; IMF, 2010; Olaoye and Talabi 2019; Oyedebe, 2015; Oyedele et al 2018 and Oyedebe et al (2018)

Source: Researcher's compilation from the literature

3.6 Econometric Estimation

The study used panel data from 30 banking institutions operating in Tanzania from 2010 to 2020. Data were analyzed using the panel data models for linear regression, most renowned as pooled ordinary least square method to minimize unbiased parameters and the possibility of reporting imitating results. Details for the POLS are highlighted in section 3.6.1.

3.6.1 Pooled Ordinary Least Square Method

This study used the Pooled Ordinary Least Square (POLS) to assess the influence of ownership structure, bank characteristics, and industry and country variables on the

performance of the banking sector in Tanzania. The effect was analyzed before and after TSA adoption. 2010 to 2016 represented the period before TSA adoption, whereas 2016 to 2020 represented the post-TSA period.

Pooled ordinary Least Square is just panel data regression analysis that applies OLS estimators. Given the nature of this study, the pooled OLS model is suitable as the number of banking institutions (N) exceeds the number of the study period (t). It should be appreciated that OLS's primary objective is to eliminate biased estimation to obtain the best linear estimation. (Broni et al., 2019). In light of the above, the general assumptions underpinning the Normality of the error term, the presence of Homoscedasticity, and the estimation model are well-detailed, including the absence of outliers. In addition, coefficients estimated in the model are considered efficient when the assumptions above are made. Diagnostic tests were applied to evaluate the assumptions above.

3.6.2 Normality and Diagnostic Tests

Variables that exceeded the acceptable skewness and kurtosis limits of ±2 and ±3 were winsorized to overcome the impact of specious outliers. The study by Chen (2019) states that winsorization is a technique used to restrain high or low values to reduce the effects of specious outliers. Moreover, Sharma and Chatterjee (2021) advocate the winsorization of data to address the impact of specious outliers and other abnormal observations. Consequently, data were winsorized to achieve the acceptable limits of ±2 for skewness and ±3 for kurtosis, as presented. All diagnostic tests were carried out using winsorized data, such as correlation, heteroscedasticity, multicollinearity, unit

root, panel cointegration, and regression analysis. The study used the STATA statistical analysis tool to perform all the diagnostic tests.

Moreover, all regression analyses were run using the same software. The choice of regression model is discussed in section 3.6.3. Chapter four provides a detailed analysis of all the diagnoses tests.

3.6.3 Choice of the Regression Model

Maniagi (2018) asserts that numerous techniques can be used to estimate regression models. Among others, the most applied ones are the fixed effects model (FEM) and the random effects model (REM) or sometimes known as the error components model (ECM). Green (2008) has added another technique known as the constant coefficient or pooled regression model in addition to the fixed effect and random effect model. There is, however, a broad application of the fixed and random effect models, as observed in numerous studies. The present study followed suit by applying the fixed and random effect models after performing the Hausman test. Highlights of the panel data regression models are as explained below: -

3.6.3.1 Pooled Regression Model

This model assumes constant coefficients as far as the intercepts and the slopes are concerned. OLS regression model could be run if all data are pooled as far as country and temporal effects are not significant. It should be appreciated that country or temporal effects could often be there; however, their statistical impact is sometimes insignificant (Green 2008).

3.6.3.2 Fixed Effect Model

Gujarati (2004) asserts that the fixed effect regression model works in a situation where the intercept in the model is not constant; hence, it is allowed to diverge among each variable as a matter of recognising the fact that each individual, or each cross-section or each unit may in one way or another have some unique and specific characteristics. As such, to consider different intercepts, one can decide to use the dummy variables. Not that, whenever applying the FEM through incorporating dummy variables, that model will be called a least-squares dummy variable (LSDV) model. Allison (2002) suggests that the model is widely applicable whenever there's a presence of heterogeneity among different subjects. FEM has become popular due to its ability to control individuals' characteristics regardless of their measurability or stability. The study by Sufian and Habibullah (2009) averred that FEM delivered unbiased outcomes and that the coefficients were evaluated to be constant. In light of the above, FEM is considered appropriate when intercepts of specific individuals may correlate with one or more regressors. However, it should be appreciated that one of the disadvantages of LSDV is the consumption of numerous degrees of freedom. Thus, dummies must be introduced in several cross-sectional units, and N is very large, and the common intercept will be suppressed.

Al-Khouri (2011) used both fixed and random effects regression models to study specific risk characteristics affecting banking sector performance. The assumption underlying the random effect model states that explanatory variables and unobserved differences are not correlated. The random effect model becomes more appropriate when drawing general inferences regarding the entire population. According to

(Greene, 2012), the random effect model can be advantageous as the regressors allow time-invariant variables to be accommodated in the model, contrary to the pooled regression model, which assumes homogeneity of all institutions. The Hausman test was used to determine the model's choice, whether the FEM or REM model.

3.6.3.3 Random Effect Model

This model assumes a random drawing of intercepts of individual units from a vast population whose mean value is constant. Intercepts of individual units are articulated as deviations from those above constant mean values. REM is considered advantageous over the FEM regarding the degrees of freedom, as there is no need to estimate the N cross-sectional intercepts. As a result, REM is deemed appropriate when there is no correlation between the random intercept of each cross-sectional unit and the regressors (Gujarati, 2004). REM works assuming that there is statistical independence or no correlation between unobserved variables and all observable variables (Allison and Waterman, 2002). The REM (Random Effects Model) is widely employed to accurately estimate data sets characterized by high variability, making it a commonly utilized model for evaluating various factors influencing firms' performance. In general, the primary purpose of the REM. The main reason for the REM is to provide a forecast for the mean distribution. However, it should be appreciated that REM cannot compute one true effect. (Borenstein et al., 2009).

3.6.3.4 Dubin-Wu-Hausman (DWH) Test

If observations can be described as a random sample from a given population, then both fixed effects and random effects regression can be used; if not a random model,

then only a fixed effect is applicable (Dougherty, 2016). For the random sample, it is important to establish which regression among the two (random or fixed) works much better. A Dubin-Wu-Hausman (DWH) test is used to choose which regression is more efficient with this random sample. DWH test is applied to assist scholars in choosing the correct model; either ordinary least square (OLS) or instrumental variable (IV) estimations in models with suspected measurement errors or simultaneous equations endogeneity. If the DWH test indicates a significant difference in the coefficients of the two regressions (RE and FE), then it is recommended to use fixed effects regression; otherwise, we can use random effects regression (Hausman and Taylor, 1981).

The null hypothesis underlying the DWH test is that the fixed effects (FE) and random effects (RE) models do not differ significantly. As the test follows the chi-square distribution, the degree of freedom (df) equals the number of regressors in the model. Then, if the computed χ^2 is greater than a given χ^2 value for given df and the level of significance (p-value), RE is not appropriate, and we use the FE model. This is because the random error terms are probably correlated with one or more regressors (independent variable) (Gujarati, 2015). Generally, this study employed the Dubin-Wu-Hausman test to test which model is more appropriate between the fixed effects model (FEM) and the random effect model (REM).

3.7 Chapter Summary

This chapter presents the methodological part of this study. It explains the methods the study used during data collection, the types and sources of data to be collected, and

data analysis tools. Key definitions such as bank characteristics, bank performance, treasury single account, bank risk, etc., have been highlighted to enable readers to connect the ideas quickly. The rationales for the sample size are highlighted. Thirty banking institutions were analysed, provided the same existed from 2010 to 2020. The CAMELS rating system has been explained in detail to broaden the understanding of the public on how CAMELS ratings are done and interpreted.

CHAPTER FOUR

DATA ANALYSIS, RESEARCH FINDINGS AND DISCUSSION

4.1 Introduction

This chapter centres on presentation, discussion and interpretation of research findings. Seven subsections, from the introduction to the chapter summary, are well discussed. While the introductory part is presented in the current paragraph, descriptive statistics and normality tests are summarised in sections 4.2 and 4.3, respectively, trailed by the correlation of variables and variable inflation factor in section 4.4. The panel unit root test and the panel cointegration tests are presented in section 4.5. In contrast, sections 4.6 and 4.7 cover the results for the Hausman test and the presentation, discussion, and interpretation of final regression results, respectively. Lastly, the highlights for the robust test on the interaction between risk and bank performance using ownership concentration and bank size as interaction variables trailed by the chapter summary are presented in sections 4.8 and 4.9 respectively.

4.2 Descriptive Statistics

This section presents the highlights of descriptive statistics with the main focus on the statistical behaviour of banks' regulatory performance, financial performance, management performance, and independent variables. These are ownership concentration, bank characteristics, industry, and country-wide variables. Table 4.1 provides the statistical summary of the variables mentioned above.

Table 4. 1:   Descriptive Statistics

Variables	Obs	Mean	Std. Dev.	Min	Max	Skew.	Kurt.
LDR	1320	0.71	0.23	0.08	1.994	0.57	7.97
NPL	1320	0.09	0.09	0	0.67	2.57	12.25
INTEREST	1320	0.15	0.02	0.13	0.19	0.92	2.52
INFL	1320	6.95	4.26	3.02	19.36	1.64	4.86
GDP GROWTH	1320	0.04	0.09	-0.09	0.19	0.63	2.06
EXCHGRATE	1320	1910.31	343.10	1323.78	2297.74	-0.15	1.29
ASSET SIZE	1320	688B	1.16T	4.55B	7.255T	3.30	14.78
CAMELS	1320	2.55	0.47	1.24	4.04 i.e.	0.37	2.82
ROA	1320	0.01	0.02	-0.23	0.06	-2.81	21.06
ROE	1320	0.09	2.78	-23.75	1.16	32.69	1173.26
NIM	1320	0.04	0.03	0	0.25	1.72	6.91
COST TO INCOME	1320	8.93	140.74	-297.95	942,02	32.08	1105.08

Source: Author's summarization from STATA computations: Representation of variables: Trans = Transformation, Sqrt = Square Root, ROE = Return on Equity (%), CAMELS= (Capital Adequacy, Asset Quality, Management Capability, Earnings, Liquidity, Sensitivity to Market Risk), NIM=Net interest Margin, ROA = Return on Asset (%), NPL = Non-Performing Loans (%), GDP GROW=Gross Domestic Product Growth Rate ((%), Winsorised Fraction (WS) 92..5 means the variable were winsorized at 7.5[th.]

The summary of descriptive statistics presented in Table 4.1 shows that the study employed 1320 observations composed of 30 banking institutions from 2010 to 2020. The analysis was carried out for eleven (11) years for each quarter, up to forty-four (44) quarters. During the selected period, the maximum Gross loan-to-deposit ratio was 199%, meaning that the gross loans were twice as much as the deposits, whereas the minimum ratio was 8%. While the maximum NPL ratio was 67%, the minimum was 0%. However, few banks have recorded a zero (0) NPL ratio due to the customers they serve in conjunction with a strict customer screening strategy. Average gross loans to deposits and NPL ratios were 71.1% and 8.7%, respectively.

Moreover, the interest rate and inflation rate averaged 15.3% and 6.95%, respectively, with a minimum and maximum interest rate of 13% and 19.1%, followed by a minimum inflation rate of 3.02% and a maximum rate of 19.36%. On the other hand

GDP growth rate averaged 3.6%, with minimum and maximum growth rates of -9.7% and 19.4%, respectively. TZS was observed to depreciate relative to US$ during the sampled period. The minimum and maximum exchange rates were TZS 1323.78/US$ and TZS 2297.74/US$, respectively, at an average of TZS 1910.314/US$. Impliedly banks with foreign currency transactions were prone to exchange rate risks. The average asset size was TZS 6.88 billion, with the minimum and maximum asset sizes of TZS 4.55 billion and TZS 7.255 trillion, respectively.

Furthermore, this study measured regulatory, financial, and management performance as dependent variables. The CAMELS rating measured the regulatory performance, which recorded an average of 3 (rounded figure) representing the marginal rating. The rating is one level before falling to an unsatisfactory grade, i.e. 4. Impliedly, any severe calamity could easily affect the entire banking industry.

Financial performance was measured by three traditional ratios: ROA, ROE, and NIM. The statistical table above shows that the average ROA, ROE and NIM were 0.8%, 9.2% and 4.4%, respectively. ROA recorded a minimum ratio of -22.7% and a maximum ratio of 6.4%. Likewise, the minimum ROE was -23.75%, whereas the maximum was 116%. In the same vein, the minimum and maximum NIM ratios were 0% and 25.3%, respectively.

Lastly, management performance was measured by the cost-to-income ratio, which recorded an average of 89.31%, with minimum and maximum proportions of -297%

and 942.02%. The average ratio of 89.31% shows clear evidence that banks were incurring huge expenses to generate income during the sampled period.

4.3   Normality Tests and Variable Transformation

Table 4.1 above shows that some variables exceed the acceptable skewness and kurtosis limits of ±2 and ±3, respectively, as required for panel data analysis. As such, variables were winsorized to overcome the impact of specious outliers, as presented in Table 4.2. The study by Chen (2019) states that winsorization is a technique used to restrain high or low values to reduce the impact of specious outliers. In the same vein, Brownen (2018) asserts that a non-systematic set of information can be changed through winsorization to improve the general performance of regression analysis. Moreover, Sharma and Chatterjee (2021) advocate the winsorization of data to address the effect of specious outliers and other abnormal observations. The study by Boudt et al. (2020) concluded that winsorization clears the problem of outliers. The ranking obtained using winsorized data was close to that obtained using clean data compared to un-winsorized data.

In light of the foregoing, the current study employed winsorization to overcome specious outliers. As such, the ratio of gross loans to deposit has been winsorized at the 5th and 95th percentile, whereas non-performing loans (NPL), asset size, return on Asset (ROA), return on equity (ROE), and cost to income ratios have been winsorized at the 7.5[th] and 92,5[th] percentile. On the other hand, the inflation rate and net interest rate margin have been transformed using inverse and square roots, respectively. Consequently, the statistical table after winsorization provides acceptable results as all

variables have achieved the desired limits of ±2 for skewness and ±3 for kurtosis, as presented in Table 4.2. Therefore, it should be appreciated that all diagnostic tests, such as correlation, heteroscedasticity test, multicollinearity test, unit root test, panel cointegration test, and regression analysis, were carried out using winsorized data.

Table 4.2: **Descriptive Statistics for Winsorized Data**

Variables		Obs	Mean	Std. Dev.	Min	Max	Skew.	Kurt.
LDR	WS .95	1320	0.71	0.17	0.34	1.02	-0.23	2.67
INFLATION	INVERSE	1320	0.19	0.08	0.05	0.33	0.14	2.05
NPL	WS 92.5	1320	0.08	0.06	0.01	0.22	0.93	2.89
ASSET SIZE	WS 92.5	1320	521B	574B	21.19B	1.864T	1.27	3.31
EXCHGRATE	-	1320	1910.314	343.10	1323.78	2297.74	-0.15	1.29
INTEREST	-	1320	0.15	0.02	0.13	0.19	0.92	2.52
GDP GROW	-	1320	0.04	0.09	-0.10	0.19	0.63	2.06
NIM	SQRT	1320	0.19	0.08	0	0.50	0.48	3.71
COST TO INC	WS 92.5	1320	2.84	5.36	-6.07	14.92	0.67	3.33
ROA	WS 92.5	1320	0.01	0.01	-0.02	0.03	-0.23	2.49
ROE	WS 92.5	1320	0.05	0.08	-0.12	0.18	-0.36	2.75
CAMELS	-	1320	2.55	0.47	1.24	4.04	0.37	2.82

Source: Author's compilation from STATA computations: WS 92.5 means the variable was winsorized at 7.5thth and 92.5th percentile, implying that all values below 7.5[th] percentile are fixed at 7.5[th] percentile, whereas values that are above 92.5[th] percentile have been set at the 92.5[th] percentile. In the same vein, WS 95 implies that variables were winsorized at the 5th and 95th percentile

4.4   Correlation Matrix

The relationship among the variables is summarized in the correlation matrix to portray the linear relationship among the variables. The minimum and maximum range are -1 to +1, so a perfect negative correlation is represented by -1, whereas a perfect positive correlation is represented by +1. In contrast, a zero coefficient implies no correlation among the variables.

Table 4. 3: Correlation Matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) CAMELS	1.00														
(2) ROA WS 92.5	-0.55	1.00													
(3) ROE WS 92.5	-0.49	0.90	1.00												
(4) NIM SQRT	-0.06	0.23	0.17	1.00											
(5) CSTINC WS 92.5	0.02	0.19	0.20	0.12	1.00										
(6) FOREIGN	-0.11	-0.04	-0.04	-0.19	-0.04	1.00									
(7) PRIVATE	-0.16	0.04	-0.01	0.04	0.05	0.42	1.00								
(8) LDR WS 95	0.38	-0.12	-0.14	0.40	0.10	-0.15	0.13	1.00							
(9) NPL WS 92.5	0.52	-0.43	-0.41	0.12	-0.04	-0.07	0.02	0.36	1.00						
(10) INTEREST	0.17	-0.11	-0.15	-0.01	-0.03	0.00	0.00	0.17	0.21	1.00					
(11) INFL INVERSE	0.21	-0.05	-0.13	0.01	-0.03	0.00	0.00	0.20	0.21	0.57	1.00				
(12) GDP	-0.04	0.11	0.09	0.31	-0.01	0.00	0.00	-0.04	-0.04	-0.08	-0.04	1.00			
(13) XCHANGE RATE	0.24	-0.03	-0.13	0.08	-0.04	0.00	0.00	0.29	0.26	0.63	0.78	-0.08	1.00		
(14) ASETSIZWS 92.5	-0.22	0.30	0.28	-0.04	0.03	0.07	0.20	-0.04	-0.05	0.10	0.15	-0.01	0.17	1.00	
(15) TSA	0.24	-0.09	-0.17	0.00	-0.04	0.00	0.00	0.26	0.26	0.67	0.76	-0.11	0.91	0.15	1.00

Source: Author's compilation from STATA computations: WS 92.5 means the variable was winsorized at 7.5thth and 92.5th percentile, implying that all values below 7.5th percentile are fixed at 7.5th percentile, whereas values that are above 92.5th percentile have been set at the 92.5th percentile. In the same vein, WS 95 implies that variables were winsorized at the 5th and 95th percentile

Table 4.3 shows no correlation among the independent variables, implying no multicollinearity issue. Almost all independent variables have coefficients not exceeding ±0.5. As such, there is clear evidence that research models are stable as the degree of responsiveness of one independent variable due to a change in another independent variable is almost zero.

4.5 Variance Inflation Factor (VIF)

The variance inflation factor test was conducted to establish whether multicollinearity exists. From the correlation table above, all independent variables were free from the multicolleanirity problem; the VIF test is a triangulation technique to confirm correlation results. Table 4.4 shows the results for the variance inflation factor.

Table 4. 4:   Test Results for Variance Inflation Factor (VIF)

Variable		*VIF*	*1/VIF*
1. FOREIGN		1.296	0.771
1. PRIVATE		1.351	0.74
LDROSIT	WS 95	1.328	0.753
INFLATION	INVERSE	2.645	0.378
NPL	WS 92.5	1.202	0.832
ASSET SIZE	WS 92.5	1.106	0.904
EXCHANGE RATE		3.181	0.314
INTEREST		1.709	0.585
GDP GROWTH		1.01	0.99
MEAN VIF		1.65	

Source: Author's compilation from STATA computations: WS 92.5 means the variable was winsorized at 7.5thth and 92.5th percentile, implying that all values below 7.5th percentile are fixed at 7.5th percentile, whereas values that are above 92.5th percentile have been set at the 92.5th percentile. In the same vein, WS 95 implies that variables were winsorized at the 5th and 95th percentile

It is imperative to note that the Variance inflation factor (VIF) measures the amount of multicollinearity in the scenario of multiple regression variables. VIF is calculated

as an overall or general model variance ratio to the variance of a model that only includes one or a single independent variable.

Several scholars take a VIF factor > ten (10) as a measurement of multicollinearity; however, those who take a more conservative threshold use a benchmark of 5 or 2.5 (Johnston et al. 2018). This study has opted for a more conservative benchmark of 2.5. In light of Table 4.4 above, there is clear evidence that independent variables have no multicollinearity as the VIF is < 2.5, implying that all independent variables can be run in the model reliably. The VIF result confirms the results of the correlation matrix in Table 4.3 above that came up with the same conclusion.

4.6 Panel Unit Root Test, Panel Cointegration Test and the Hausman Test

4.6.1 Introduction

Establishing a long-run relationship among the variables is essential before running the models. To achieve this objective panel unit root test must be conducted first before performing the panel Cointegration test. Therefore, two test results for the panel unit root test and panel Cointegration test are discussed in this subsection. On top of that, the Hausman test was conducted to determine whether the models followed the fixed or random effect.

4.6.2 Panel Unit Root Test Results

The panel unit root test was conducted to check whether data contains a unit root or the same is stationary. Due to the low power observed in the standard time series unit tests compared to the panel unit root test, this research used the panel unit root test. It

was considered advantageous to use panel unit root tests to take advantage of its significant power in a restricted sample. Several panel unit root tests could be chosen; however, this research used the Levin Lin Chu test as long as the panel data is balanced. Table 4.5 presents the results of the test.

Table 4. 5: Levin Lin Chu Panel Unit Root Test Results

Variables		Statistic	P-value	1st Difference	Remarks
ASSET SIZE	WS 92.5	-0.516	0.3029	0.0000***	Reject the Null Hypothesis
LDR	WS 95	-2.968	0.0015	-	Reject the Null Hypothesis
GDP	-	-30.567	0.0000***	-	Reject the Null Hypothesis
INTEREST	-	-4.519	0.0000***	-	Reject the Null Hypothesis
EXCHANGE RATE	-	-4.937	0.0000***	-	Reject the Null Hypothesis
NPL	WS 92.5	-0.177	0.4299	0.0000***	Reject the Null Hypothesis
INFLATION	INVERSE	-2.333	0.0098**	-	Reject the Null Hypothesis
ROA	WS 92.5	-12.347	0.0000***	-	Reject the Null Hypothesis
ROE	WS 92.5	-10.416	0.0000***	-	Reject the Null Hypothesis
NIM	SQRT	-30.214	0.0000***	-	Reject the Null Hypothesis
CAMELS	-	-11.339	0.0000***	-	Reject the Null Hypothesis
COST TO INC	WS 92.5	-3.839	0.0001***	-	Reject the Null Hypothesis

Note that: H0: There are unit-roots whereas, H1: No unit-roots. The symbol*** indicates that the test result is significant at a 1% significance level. WS 92.5 means the variable was winsorized at the 7.5th and 92.5th percentile, implying that all values below the 7.5th percentile are fixed at the 7.5th percentile. In contrast, values above the 92.5th percentile have been set at the 92.5th percentile. In the same vein, WS 95 implies that variables were winsorized at the 5th and 95th percentile

The Levin Lin Chu panel unit root test in Table 4.5 above shows that except for asset size and non-performing loans (NPL), all variables are stationary and statistically significant at a 1% significance level. This called for the performance of the first difference test for Asset size and Non-Performing Loans (NPL). Consequently, all variables turned out stationary and significant at a 1% significance level.

It is also imperative to note that all variables with a P-value < 0.05 have unit roots (non-stationary), such as calling for rejecting the null hypothesis. As such, in Table 4.5 above, all variables are stationary and statistically significant at a 1% significance

level hence calling for a rejection of the null hypothesis as highlighted in Table 4.5 above. The presence of data stationarity implies that neither temporary nor permanent shock can ruin the sustainability of data; as such, the data analysis output for this study can be interpreted reliably and will add value to policymakers and all other interested parties.

4.6.3 Kao Panel Cointegration Test Results

The outcome of the panel unit root test paves the way for the Cointegration test to check the presence of a long-run relationship among the variables. Studies by Kao (1999), Kao and Chen (1995a), Kao and Chen (1995b) and Phillips and Moon (1997) posit that, the cointegration test is intended to handle spurious regression problems in panel data. The long-run equilibrium relationship between time series variables that are non-stationary is referred to as cointegration. The objective of Kao's test is to ascertain the presence of cointegration in panel data that encompasses both cross-sectional and time-series dimensions. In light of the above, the present study followed suit and Table 4.6 presents the Kao Cointegration test results.

Table 4. 6:   Kao Panel Cointegration Test Results

Variables		(1) Regulatory Performance	(2) Financial Performance			(3) Management Performance
		CAMELS	ROA	ROE	NIM	COST TO INCOME
Modified Dickey-Fuller t	Statistic	-17.7634	-17.1658	-18.7281	-16.3021	-24.2991
	P-value	0.0000***	0.0000***	0.000***	0.000***	0.0000***
Dickey-Fuller t	Statistics	-15.4987	-13.2832	-12.7309	-17.0064	-17.0515
	P-value	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***
Augmented Dickey-Fuller t	Statistics	-10.2978	-12.1559	-12.0941	-31.8846	-10.1978
	P-value	0.0000***	0.0000**	0.0000***	0.0000***	0.0000***
Unadjusted modified Dickey-Fuller t	Statistics	-41.9574	-33.4590	-29.4606	-53.0700	-38.9214
	P-value	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***
Unadjusted Dickey-Fuller t	Statistics	-20.2953	-16.3698	-14.5095	-25.3062	-19.0625
	P-value	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***

Note that: H0: No cointegrated, whereas H1: All panels are cointegrated. The symbol*** indicates that the test result is significant at a 1% significance level.

The Kao panel cointegration test in Table 4.6 above shows all panels are cointegrated and are statistically significant at a 1% significance level. For all the five tests presented in Table 4.6, the p-values are consistently below 0.05 for each test. This suggests that there is a stable long-run relationship between the variables It is also imperative to note that a test statistic with a P-value < 0.05 means the presence of cointegration, such as calling for rejecting the null hypothesis. Table 4.5 above shows that all panels are cointegrated and are statistically significant at a 1% significance level hence calling for a rejection of the null hypothesis as highlighted in table 4.6 above. Therefore, it is innocuous to conclude that a stable long-run relationship exists between ownership, bank characteristics, industry and country-wide variables, and bank performance before and after adopting the treasury single account system.

4.6.4 Results of the Hausman Test

Before conducting regression models, it is crucial to determine whether the appropriate model to be employed is the fixed effect or random effect model. The Hausman test was applied to identify the suitable model to use. Table 4.7 presents the results of the Hausman test.

Table 4. 7: The Results of the Hausman Test

Details	Variables		Chi2	P-value	Decision
Regulatory Performance	*CAMELS*	-	15.57	0.2729	P > 0.05, Random Effect
Financial Performance	*ROA*	WS 92.5	33.89	0.0013	P < 0.05, Fixed Effect
	ROE	WS 92.5	3.62	0.0013	P < 0.05, Fixed Effect
	NIM	SQRT	6.46	0.9278	P > 0.05, Random Effect
Management Performance	*COST-TO-INCOME*	WS 92.5	5.54	0.9612	P > 0.05, Random Effect

Note that; H0: The favourite model is the Random Effect Model, H1 The favourite model is the Random Effect Model. WS 92.5 means the variable was winsorized at the 7.5th and 92.5th percentile, implying that all values below the 7.5th percentile are fixed at the 7.5th percentile. In contrast, values above the 92.5th percentile have been set at the 92.5th percentile. In the same vein, WS 95 implies that variables were winsorized at the 5th and 95th percentile, and SQRT means square root.

The Hausman test is widely used in panel data to determine whether the model takes a fixed or random effect. Without performing the Hausman test, the chances of committing a type one error are high, i.e. (rejecting the null hypothesis or otherwise committing a type two error of accepting the null hypothesis (Cohen, 1988). The null hypothesis states that the preferred model is random, whereas the alternative hypothesis calls for a fixed-effect model. The decision is based on a five per cent probability as a benchmark for rejecting or accepting the null hypothesis. It should be appreciated that the null hypothesis is rejected if the p-value < 0.05, meaning that the model will take the fixed effect; otherwise, the random effect model will be chosen. Table 4.7 above shows that, except for ROA and ROE take a fixed-effect model,

CAMELS, NIM, and Cost to Income take a random-effect model. Moreover, the robust test will be applied to all models to overcome potential heteroscedasticity problems, such as achieving model stability and authenticating the regression results.

4.7   Panel Data Regression Results and Financial Statements Analysis Results

This section discusses research findings in two-fold. The first part covers the linear regression results on the banking sector performance in Tanzania before and after the Treasury Single Account (TSA) adoption. The second aspect covers banks' financial statements analysis to measure Tanzania's banking sector performance before and after TSA adoption.

Regression results expound on the influence of ownership concentration, bank characteristics, and industry-specific and country-wide variables on bank performance before and after adopting the Treasury Single Account system. As justified in Chapter Three, the panel data regression model, mostly known as the pooled ordinary least square method, was applied to analyze the panel data. It should be appreciated that panel data avoids unbiased parameters and the possibility of reporting emulating results.

On the other hand, the results of financial statements analysis were based on average accounting ratios to examine the influence of ownership concentration, bank characteristics, and industry-specific and country-wide variables on the banking sector performance before and after the Treasury Single Account adoption. Furthermore, bank performance is discussed in three categories: financial performance, regulatory

performance, and management performance. All independent variables (ownership concentration, bank characteristics, and industry-specific and country-wide variables) were gauged against the abovementioned performance measures. Subsections 4.7.1, 4.7.2 and 4.7.3 discuss regression results and the financial statement analysis results on the influence of the above-mentioned independent variables on each of the three performance measures: banks' financial performance, regulatory performance, and management performance.

Table 4.8 shows regression results on the influence of ownership concentration, bank characteristics, and industry-specific and country-wide variables on the banking sector's financial performance. Banks' financial performance was assessed by employing three accounting ratios: Return on Assets (ROA), Return on Equity (ROE), and Net Interest Margin (NIM)

Table 4. 8: Linear Relationship between Ownership Concentration, Bank Characteristics, and Industry-Specific and Country-Wide Variables on the Overall Banking Sector's Financial Performance

	Dependent variables					
	ROA		ROE		NIM	
Variable	Coefficient	Test Statistics	Coefficient	Test Statistics	Coefficient	Test Statistics
1. FOBEIGN BANKS	0	0	0.361	1.23	-0.039	-2.01**
	0	0		(0.22)		(0.045)
ASSET SIZE	2.74e-08	1.95*	6.05e-14	2.38**	*-6.10e-15*	*-0.62*
		(0.06)		(0.024)		*(0.535)*
LDR	0.018	1.55	0.052	1.73*	0.078	1.99**
		(0.131)		(0.095)		(0.047)
NPL	-0.031	-1.90*	2.187	1.03	0.37	1.08
		(0.068)		(0.304)		(0.282)
EXCHGE RATE	0.00	2.71**	0.00	-0.79	0.00	10.43***
		(0.11)		(0.432)		(0.000)
INFLATION	-0.011	-1.07	1.876	0.82	-0.073	-2.92***
		(0.292)		(0.412)		(0.000)
INTEREST RATE	0.267	2.80***	2.396	3.13***	0.502	2.89***
		(0.000)		(0.000)		(0.000)
GDP GROWTH	0.02	3.78***	0.121	4.14***	0.283	21.10***
		(0.000)		(0.000)		(0.000)
1. TSA	0.092	2.24**	0.889	3.18***	1.289	4.89***
		(0.033)		(0.000)		(0.000)
1.TSA#1.FB	-0.001	-0.23	-0.363	-1.22	0.022	2.15**
		(0.822)		(0.221)		(0.032)
1.TSA#ASSETSIZE	-9.62e-09	-1.84*	-1.83e-14	-2.28**	1.23e-14	1.67*
		(0.076)		(0.034)		(0.096)
1. TSA#INTEREST	-0.323	-3.00***	-2.563	-2.99***	-0.179	-0.87
		(0.000)		(0.000)		(0.384)
1. TSA#INFLATION	0.017	1.49	-2.023	-0.85	0.415	8.92***
		(0.148)		(0.394)		(0.000)
1. TSA#EXCHRATE	-1.1e–05	-0.83	0.00	0.44	-0.001	-5.12***
		(0.899)		(0,658)		(0.000)
1. TSA#GDP GROWTH	-0.01	-2.16**	-.096	-3,11***	-0.028	-2.33**
		(0.04)		(0.000)		(0.02
Overall R-squared	0.144		0.158		0.317	

Note that: *, **, and *** imply that the variable is statistically significant at 10%, 5% and 1%significance levels. The panel data results are reported using t-statistics, whereby the p-values are put in parenthesis. Any variable named after a numeric coefficient (1.) represents a dummy variable. E.g. 1. TSA represents TSA as a dummy variable. Moreover, any variable tagged with # implies TSA interaction. FB=Foreign banks.

4.7.1 Relationship between Ownership Concentration and Bank Performance

Ownership has been defined in terms of shareholding structure (foreign or domestic) and (private or state-owned). The latter acknowledged state-owned banks as banks whose majority shares are held by the treasury registrar of the government. Thus, dummy variables were used to express bank ownership such that for foreign banks, the variable was equal to 1 and zero (0) otherwise. In contrast, the variable equalled one (1) and zero (0) otherwise for private banks. This section discusses both regression

analysis and financial statements analysis results. The discussion links between regression results and financial statements analysis. Section 4.7.1 pairs foreign vs. domestic banks' and private vs. state-owned bank performances; whereas bank characteristics (bank size and bank risks) are discussed in section 4.7.2. Lastly, industry and country-wide variables are discussed in section 4.7.3.

As highlighted above, three performance indicators were examined. The first indicator centred on financial performance (ROA, ROE and NIM) as discussed in subsection 4.7.1.1, followed by the regulatory performance (CAMELS ratings) in subsection 4.7.1.2 and lastly, management performance (Cost to Income Ratio) in subsection 4.7.1.3. To make the analysis interesting, the discussion links between regression analysis and financial statements analysis results.

4.7.1.1 The Influence of Ownership Concentration on Banks' Financial Performance

This sub-section links regression results and financial statements analysis. The combination of the two levels of analysis made the discussion interesting. Financial statements analysis was used to complement and amplify regression results. The first part of the discussion covers regression analysis results, while financial statements analysis is covered in part two.

(i) Regression Results on Ownership Concentration and Banks' Financial Performance (ROA, ROE and NIM)

Regression results for the dummy variables (foreign vs domestic banks) and (private vs state-owned -banks) show that foreign banks' performance had improved compared

to local banks after TSA interaction using NIM as an indicator. As highlighted in the introductory part of this sub-section, these dummy variables were defined as follows. For foreign banks, the variable was equal to 1 and zero (0) otherwise. In contrast, the variable equalled one (1) and zero (0) otherwise for private banks.

- **Regression Results on Private vs State-Owned Banks and Bank Financial Performance**

To interpret regression results, it is imperative to refresh the discussion in chapter three to explain the implication of regression results on the net interest margin (NIM). It should be appreciated that NIM tests the ratio of net interest (interest earned on loans – interest incurred on deposits) to Earning Assets. Table 4.8 above shows that foreign banks' Net- Interest Margin was negative and statistically significant (–0.039, $p<0.05$) before TSA but had a positive and statistically significant effect (0.022, $p<0.05$) after TSA. The negative association between NIM and foreign banks before TSA implies that domestic banks' NIM improved compared to foreign banks during the period under review. Impliedly, domestic banks were making high-interest income on deposits at a low-interest expense because they leveraged the government's deposits as a free funding source. Contrariwise, foreign banks were not the primary beneficiaries of government deposits, thus missing the privilege that domestic banks had during the pre-TSA adoption. For that reason, the decline of domestic banks' NIM after TSA has a direct link with the withdrawal of government deposits from these commercial banks, of which domestic banks were the primary beneficiaries. That is why the regression coefficient turned positive and statistically significant after TSA, implying that foreign banks' NIM had improved relative to domestic banks' NIM. This

is because foreign banks did not find it difficult to regulate their deposit base as they were not leveraging on government deposits compared to domestic banks. In contrast, after TSA adoption, the position changed as evidenced by a positive foreign banks' coefficient (0.022, $p < 0.05$), implying that foreign banks' NIM had improved compared to domestic banks' NIM. Financial statements analysis confirms the above regression results as evidenced by an increase in foreign banks' average NIM paralleled by a decrease in domestic banks' average NIM after TSA adoption.

Regression results for ROA and ROE were not statistically significant. As highlighted in the previous paragraphs, the studies by Konaraa et al. (2019), Pillai et al. (2017), and Peter et al. (2019) found inconsistent results on the presence of a significant relationship between ownership and performance. However, none of these studies has examined the influence of TSA on bank performance for each bank's classification. The review also found that studies that have attempted to discuss the impact of TSA on bank performance have examined bank performance in general, thus missing the bank classifications' rhythm, as summarized in the next paragraph.

Generally, the present study yielded mixed results depending on the variables used. The results for NIM were statistically significant, but the effect was contrarywise to ROA and ROE. The review of literature on studies that have attempted to study the influence of TSA on bank performance came up with diverse results, as the results were either positive or negative and statistically significant or otherwise. The study by Oyedele et al. (2018) used stakeholders' theory to examine the influence of TSA on bank performance. Time series data from (2010 to 2016) using the Ordinary Least

Square estimation method were used. The result revealed that the Treasury Single Account has negatively affected banks' liquidity positions, deposit mobilization, employment creation, saving culture and the overall performance of Nigeria's banking sector. In general, the study concludes that the implementation of the Treasury Single Account (TSA) system had a negative impact on the liquidity positions of banks. This was attributed to difficulties in deposit collection and changes in the saving behaviour of individuals. Ultimately, these have impacted employment, and Nigeria's banking sector performance as a whole was negatively affected.

The above results were contrary to the study by Olaoye and Talabi (2019), which found that TSA positively impacted bank performance. Based on the above results, in conjunction with the results of the present study, it has been found that, depending on the variables used, TSA may either positively or negatively impact bank performance. Moreover, for the results to be statistically significant or not, the study found that there is no general conclusion; rather, depending on the variables used, TSA may either have a direct or indirect impact on bank performance.

Based on the results of domestic and foreign banks, the study rejects the null hypothesis that the influence of ownership concentration has no significant impact on bank performance before and after TSA adoption. The result for domestic and foreign banks confirms the incidence of a significant affiliation between ownership structure and bank performance before and after TSA adoption using NIM as a performance indicator.

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- **Regression Results on Private vs State-Owned Banks and Bank Financial Performance**

The hypothesis that the influence of ownership concentration has no significant impact on bank performance before and after TSA adoption was true for private and state-owned banks. The results revealed an insignificant relationship from the regression analysis in Table 4.8 above, as ROA, ROE, and NIM recorded insignificant results. However, based on financial statements analysis in Table 4.9, private banks' have recorded an increased NIM after TSA as opposed to a decreased NIM for state-owned banks. Impliedly, state-owned banks, one of the primary beneficiaries of government deposits, made high-interest income on government deposits at a low interest expense before TSA because they leveraged the government's deposits as a free funding source. Contrariwise, after TSA, state-owned banks' NIM had deteriorated as opposed to private banks' NIM. The latter had recorded an improved NIM compared to the period before TSA. ROA and ROE for both private and state-owned banks had deteriorated after TSA adoption, implying the low profitability of these banks after TSA adoption. A detailed discussion of financial statements analysis is presented in part (ii) of this discussion in line with Figure 4.1 in subsequent paragraphs.

The above notwithstanding, regression results for domestic and foreign banks are consistent with studies conducted by several scholars using the agency theory as the centre of discussion. However, the present study found that the results for private versus state-owned banks were not consistent with previous studies that linked the agency theory to their studies. Reference is drawn from the study by Pillai et al. (2017) that used the panel data of 349 firms from 2005-2012 to study how corporate

governance affects institutional performance in GCC countries. It was noted that corporate governance variables, including state- shareholdings, size of the board, type of audit, leverage and corporate social responsibility, have a significant impression on the institutions' performance in almost all GCC states. The above result is consistent with other studies that used the agency theory to check whether there is a significant influence between ownership structure and bank performance. The study by Konaraa et al. (2019) combined the agency and efficiency theories in their study, which applied DEA to study the bank efficiency of nine countries: Columbia, Hungary, Indonesia, Malaysia, Poland, Russian Federation, South Africa and Turkey. The study used panel data from 1999 to 2013 and found that foreign-owned banks are advantageous in terms of the overall level of technical and scale efficiency. However, when it comes to measures of revenue efficiency, cost efficiency, and pure technical efficiency, the study discovered that foreign banks exhibited lower levels of efficiency.

Similarly, Peter et al. (2019) used time series data to assess MENA countries' bank efficiency for nine years, i.e. from 2006 to 2014. The study found that ownership, origin, and type of banks are associated with banking efficiency when performance indicators are the balance sheet, financial health and profit sheet. Nevertheless, regulatory and cultural barriers exist in each country. However, the present study found that the results for private and state-owned banks were inconsistent with the results mentioned above. Regression results recorded an insignificant connection between the variables, implying that neither TSA nor ownership structure had influenced bank performance over the study period.

(ii)   Results of Financial Statements Analysis for (Domestic V Foreign Banks) and (Private V State-Owned Banks)

In conjunction with regression results in Table 4.8 above, financial statements analysis was carried out to observe the trend of bank performance before and after TSA adoption. Table 4.9 provides such a summary. The performance of private banks was paired with state-owned banks, while a similar analysis was carried out for domestic and foreign banks. ROA, ROE and NIM were used as performance indicators. As such, the financial analysis in Table 4.9 shows that, except for the three variables that had a positive effect, the overall impact after TSA adoption is negative for all other performance indicators. In conjunction with the preceding, the Net interest Margins for foreign and private banks increased after TSA. Table 4.9 summarises financial statements analysis before and after TSA adoption for each of the bank classifications.

Table 4. 9: Trend of Banks' Financial Performance in terms of Ownership Concentration

	Pre TSA							Post TSA						
	2010	2011	2012	2013	2014	2015	Average	2016	2017	2018	2019	2020	Average	Average difference
NPL(DB)	4.9	7.0	7.4	6.1	6.7	6.6	**6.5**	9.3	17.6	15.0	12.2	12.3	**13.3**	*-6.8*
NPL(FB)	3.3	21.1	5.0	5.0	7.1	7.0	**8.1**	7.9	8.4	8.0	8.2	9.3	**8.4**	*-0.3*
NPL (PB)	5.0	5.9	5.6	6.0	6.5	6.5	**5.9**	8.1	11.0	11.0	11.6	11.9	**10.7**	*-4.8*
NPL (SB)	3.5	7.4	9.8	6.3	8.6	8.5	**7.3**	11.9	23.5	11.8	3.1	4.4	**10.9**	*-3.6*
NPL(LB)	7.1	7.0	6.6	7.5	8.2	6.5	**7.1**	8.1	8.5	6.3	5.7	6.4	**7.0**	*0.1*
NPL(SB)	4.0	5.0	6.0	5.5	6.4	7.0	**5.6**	8.8	14.2	13.0	12.2	12.6	**12.2**	*-6.6*
NPL(I)	7.9	8.2	7.8	7.5	7.8	7.0	**7.7**	9.1	11.5	10.6	10.7	10.5	**10.5**	*-2.8*
LDR(DB)	53.7	60.4	65.5	64.9	70.3	74.5	**64.9**	81.0	77.3	76.1	78.5	81.6	**78.9**	*-14*
LDR(FB)	60.2	58.9	62.7	64.0	63.1	64.9	**62.3**	70.2	68.2	68.1	71.5	71.2	**69.9**	*-7.6*
LDR(PB)	73.2	72.9	72.8	72.5	72.3	73.8	**72.9**	73.6	74.0	74.9	74.0	73.5	**74.0**	*-1.1*
LDR(SB)	46.5	52.1	57.1	63.7	66.5	71.2	**59.5**	70.6	75.9	77.6	78.1	81.6	**76.7**	*-17.2*
LDR(LB)	56.0	58.8	62.3	62.3	65.4	68.2	**62.2**	76.0	71.5	70.9	71.6	73.9	**72.8**	*-10.6*
LDR(SB)	60.2	62.9	71.1	73.4	72.5	80.8	**70.1**	77.8	79.2	78.3	88.0	88.1	**82.3**	*-12.2*
LDR(IB)	58.3	61.0	65.3	66.8	68.4	72.2	**65.3**	74.9	74.3	74.3	76.9	78.3	**75.8**	*-10.5*
LDR(A)	80	80	80	80	80	80	***80***	80	80	80	80	80	***80***	*N/A*

Note: NPL = Non-Performing-loans, LDR = gross loans to total deposits, DB = domestic banks, FB = foreign banks, (PB) = Private Banks, (SB) = State-Owned Banks, LB = Large Banks, SB = Small Banks, I = Industry Average, A =Average regulatory threshold.

The above analysis indicates that after TSA, domestic banks outperformed foreign banks, using ROA and Net Interest Margin as performance indicators, whereas, in terms of ROE, foreign banks superseded domestic banks. On the other hand, private banks outperformed state-owned banks using ROA and NIM as performance indicators, whereas, in terms of ROE, state-owned banks were better off than private banks. A more detailed discussion is presented in subsequent paragraphs.

Regarding foreign banks, the ratio (NIM) increased from an average of 3.6% before TSA to 3.94%. Private Banks' ratio increased from 4.33% before TSA to 4.84% afterwards. Moreover, after TSA, ROE for state-owned banks increased from 1.08% to 2.22%. All other variables have recorded a negative change after TSA, implying that banks' performance had deteriorated after TSA. This section discusses whether there is a significant relationship between independent variables or not, in conjunction with financial analysis, to explain the reasons for performance differences before and after TSA adoption.

Similarly, Peter et al. (2019) used time series data to assess MENA countries' bank efficiency for nine years, i.e. from 2006 to 2014. The study found that ownership, origin, and type of banks are associated with banking efficiency when performance indicators are the balance sheet, financial health and profit sheet. Nevertheless, regulatory and cultural barriers exist in each country. However, the present study found that the results for private and state-owned banks were inconsistent with the results mentioned above. Regression results recorded an insignificant connection between the variables, implying that neither TSA nor ownership structure had influenced bank

performance over the study period. Figure 4.1 summarizes the trend of NIM before and after TSA for both (foreign versus domestic banks) and (private versus state-owned banks).

Figure 4. 1: **Trend of NIM for Domestic Versus Foreign Banks and Private Versus State-Owned Banks**
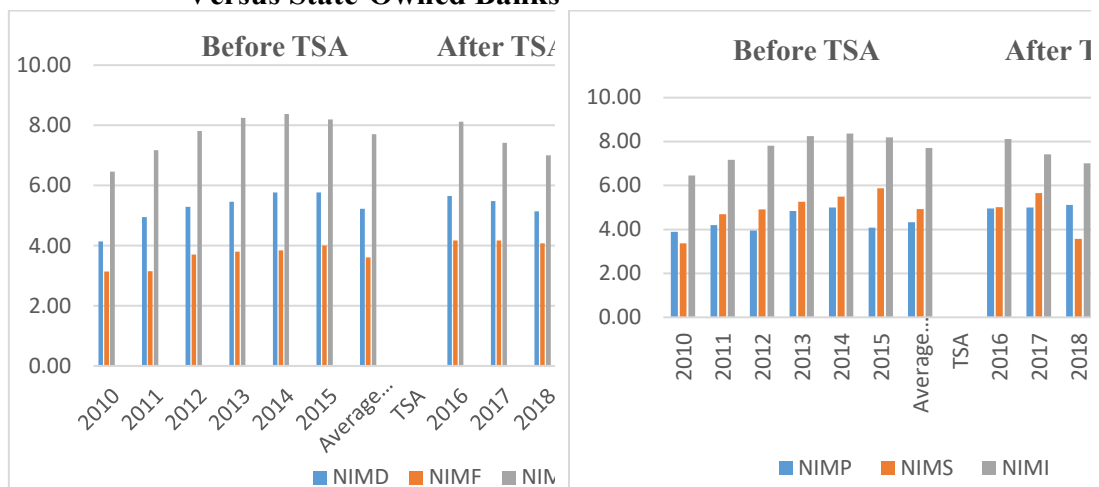
Note: NIMD =Net Interest Margin for Domestic Banks, NIMF=Net Interest Margin for Foreign Banks, NIMI= Net Interest Margin for the Banking Industry

Note: NIMP =Net Interest Margin for Private Banks, NIMS=Net Interest Margin for State-Owned Banks, NIMI= Net Interest Margin for the Banking Industry

As depicted in Figure 4.1, following the adoption of the Treasury Single Account (TSA), there was an increase in the average Net Interest Margin (NIM) for foreign and private banks. In contrast, domestic and state-owned banks experienced a decline in their NIM ratios. By pairing the performance into different classifications, foreign banks' NIM rose from 3.6% to 3.94% compared to domestic banks, whose ratio declined from 5.23% to 5.02%. On the other hand, private banks' NIM increased from 4.33% to 4.84% compared to state-owned banks, whose ratio declined from 4.93% to 3.86%. Nevertheless, though domestic banks' NIM decreased while foreign banks' ratio increased, the result still shows that domestic banks' NIM was above foreign

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banks' NIM in both periods. Hence, based on the above performance, we can conclude that domestic banks outperformed foreign banks in both periods.

On the other hand, before TSA adoption, private banks' NIM was slightly below state-owned banks' ratio, the position changed after TSA adoption, where private banks' NIM was above the state-owned ratio. The conclusion drawn from the analysis is that post-TSA implementation, private banks surpassed state-owned banks in terms of performance, as indicated by the Net Interest Margin (NIM). It should be appreciated that, after the TSA adoption, domestic banks' liquidity position was impaired due to the withdrawal of government deposits from commercial banks.

Consequently, banks were forced to mobilize deposits from the general public at a relatively high funding cost other than depending on government deposits. For that reason, domestic banks' NIM had deteriorated as opposed to foreign banks' NIM, whose ratio increased after TSA. This is due to the facts mentioned above that domestic banks were the primary beneficiaries of government deposits. The results are consistent with the study by Kanu (2015) on the impact of TSA on Nigeria's banks' liquidity. The study revealed that Nigeria's government funds were kept under commercial banks' custodians before TSA implementation. As a result, the removal of government funds from these deposit-taking banking institutions caused liquidity problems in the overall banking industry. Interbank interest rates rose as commercial banks sought to solicit funds from other expensive sources to stabilize their liquidity positions. Generally speaking, Nigerian banks' deposits and the cost of funding the liquidity position were negatively affected.

However, to the best of the researcher's knowledge, no study has examined the impact of the treasury single account system on bank performance by particularizing bank performance in their respective classifications[6]; as such, there is limited literature to draw reference from. Previous studies on TSA were too general to discuss the influence of TSA on overall bank performance without linking the performance to bank origin ownership structure or bank size. Likewise, most of these studies that have sought to examine the impact of TSA on bank performance are in the African context and are inclined to Nigeria's banks. This is because Nigeria's government adopted TSA in 2015, thus attracting scholars to start researching the impact of TSA on bank performance. Tanzania's government followed suit by adopting TSA in 2016.

To date, there is no evidence of studies that have been carried out to study the influence of TSA on bank performance in Tanzania. Against this background, the present study attempts to cover the knowledge gap by analysing the effect of TSA on bank performance by classifying banks into different classifications to better comprehend about bank performance. Because of the preceding, the regulatory authority (Central Bank of Tanzania), commercial banks' management, policymakers, scholars and the general public can use the results of the present study for further reference.

The above notwithstanding, It is noteworthy that several studies have attempted to examine the influence of ownership on bank performance without linking TSA as an

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6 Bank classifications can be defined in terms of domestic banks, foreign banks, private banks, state-owned banks, large banks and small & medium banks

interaction variable. This could probably be because most developed countries have been implementing TSA right from the beginning, and several developing countries are yet to fully adopt the TSA model, thus missing enough literature discussing the influence of TSA on bank performance. Apart from Nigeria's studies that have attempted to examine the impact of TSA on bank performance, most other kinds of literature on TSA discuss TSA in general as a fiscal policy. As highlighted in the opening remarks of this paragraph, the present study has reviewed a reasonable number of studies that have attempted to discuss the influence of ownership on bank performance. However, most of them are more inclined toward developed countries.

Herein below are a few examples of those studies. The study by Shaban and James (2017) focused on investigating Indonesian bank performance and risk exposure in response to changes in ownership. Foreign and private banks recorded low-risk profiles and were highly profitable compared to state-owned ones. In the same vein, earlier studies have generally concluded that the type of ownership structure impacts the performance of firms (Boycko & Shleifer, 1995; Dewenter & Malatesta, 2001). The above notwithstanding, the present study's focus was to examine the influence of TSA on bank performance based on ownership concentration, bank characteristics, and industry-specific and country-wide variables, as explained in line with regression results and financial analysis in the previous paragraphs.

Furthermore, figure 4.2 provides helpful insight into ROA and ROE for the period under review. Though regression results were not statistically significant, the result shows that after TSA adoption, both the sector's composite ROA and ROE declined.

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The sector's ROA declined from 2.47% to 1.62%, whereas ROE declined from 13.06% to 6.31%. In light of the above, we can conclude that, since regression results were not statistically significant, then ROA and ROE had declined based on factors other than TSA, or otherwise, TSA might have come with an indirect impact on bank performance as evidenced by a general decline of sector's ROA and ROE after TSA adoption. A detailed analysis for specific bank classifications (domestic versus foreign banks) and (private versus state-owned banks) has been highlighted in subsequent paragraphs in line with Table 4.9 above and Figure 4.2. In light of the preceding, figure 4.2 summarises the trend of ROA and ROE before and after TSA for domestic and foreign banks.

Figure 4. 2: Trend of ROA and ROE for Domestic and Foreign Banks
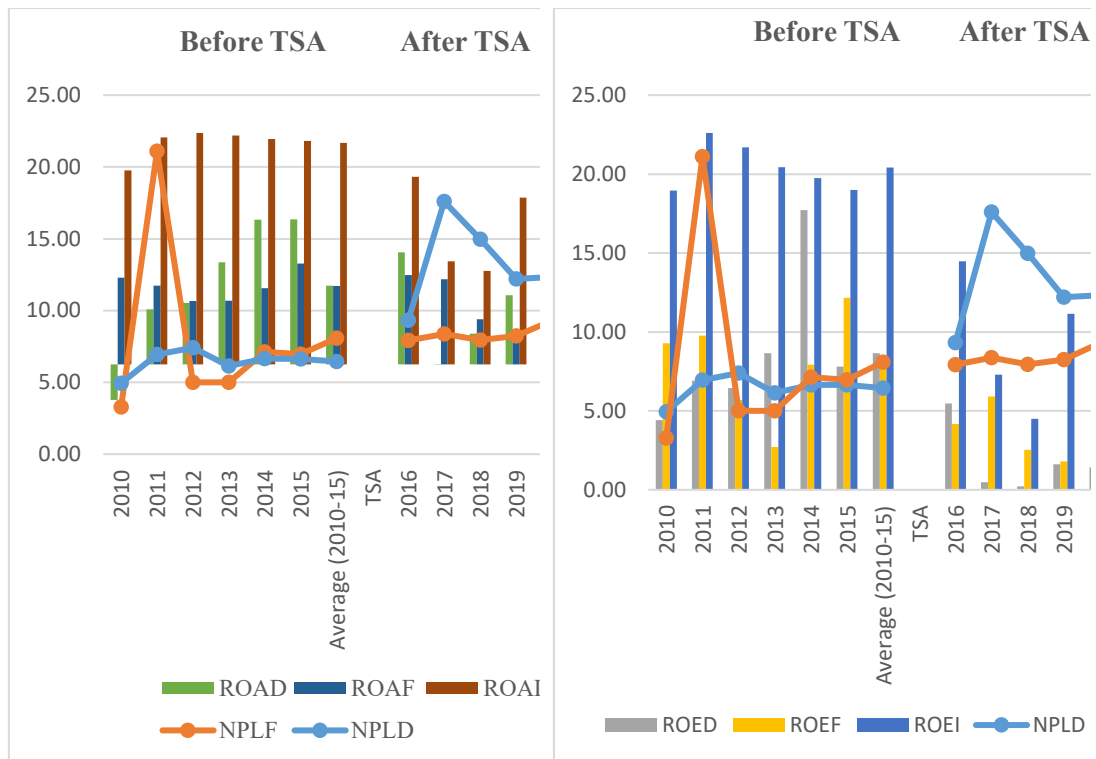
ROAD=Return on Asset for Domestic Banks, ROAF=Return on Asset for Foreign Banks, ROAI=Return on Asset for the Banking Industry, NPLD =Non-Performing Loans Ratio for Domestic Banks, NPLF = Non-Performing Loan Ratio for Foreign Banks

ROED=Return on Equity for Domestic Banks, ROEF=Return on Equity for Foreign Banks, ROEI=Return on Equity for the Banking Industry, NPLD =Non-Performing Loan Ratio for Domestic Banks, NPLF = Non-Performing Loans Ratio for Foreign Banks

Figure 4.2 above shows a general decline in ROA and ROE after TSA adoption. The analysis revealed that domestic banks outperformed foreign banks when using Return on Assets (ROA) as a performance indicator. On the other hand, in terms of Return on Equity (ROE), foreign banks surpassed their domestic counterparts. It is imperative to appreciate that, though statistical results were not significant, financial analysis in Table 4.9, in conjunction with Figure 4.2 above, shows a general decline of ROA and ROE after TSA, implying that TSA has indirectly affected ROA and ROE. For

domestic banks, ROA declined from 0.88% to 0.66%, while the same declined from 0.87% to 0.59% for foreign banks. In the same vein, domestic banks' ROE declined from 5.54% to 1.18%, and the same decreased from 5.07% to 1.93% for foreign banks after TSA. Generally speaking, the decline in ROA and ROE for domestic and foreign banks is attributed to an increase in NPL and non-interest expenses. Table 4.11 shows an average banking sector's NPL increase from 7.69% before TSA to 10.46% after TSA. The increase in the NPL ratio, paralleled by a rise in the cost-to-income ratios for the banking sector, is summarised in tables 4.11 and 4.19. Furthermore, an examination of the 2020 Bank of Tanzania financial sector supervision annual report uncovered a consistent rise in the ratio of personnel expenses to non-interest expenses. This ratio increased from 44.32% in 2016 to 50% in 2020. It is against this background that banks' profitability ratios declined, as summarised above. Conclusively, the present study found that, after TSA, domestic banks outperformed foreign banks using ROA as a performance indicator, but in terms of ROE, the results were contrariwise.

However, figure 4.2 above shows a general decline in ROA and ROE for almost all banks after TSA adoption. In terms of ROA, domestic banks were better off than foreign banks, as evidenced in Figure 4.2 and Table 4.9 above. The results for ROA are consistent with the study by Aminiel (2013), who came up with similar effects on the Tanzania banking sector that domestic banks outperformed foreign banks. However, Doan et al. (2018) assessed and revealed diverse findings on foreign banks' influence on income. Those foreign banks in developing countries with divergent incomes recorded better performance than other banks; however, the results were different in developed countries as foreign banks were less efficient. Pelletier (2018)

studied the sub-Saharan African bank performance and found that foreign-owned banks outperformed domestic banks from emerging markets and globally operating banks. However, foreign-owned banks originating from regional markets were found to be at par with local banks. The trend for private and state-owned banks' performance is summarised in Figure 4.3. The chart summarises the financial analysis presented in Table 4.9 above, showing a general decline in ROA and ROE after TSA adoption. The chart shows that, after TSA adoption, private banks' ROA superseded state-owned ROA; however, the results were contrariwise in terms of ROE.

Figure 4. 3:   Trend of ROA and ROE for Private and State-Owned Banks
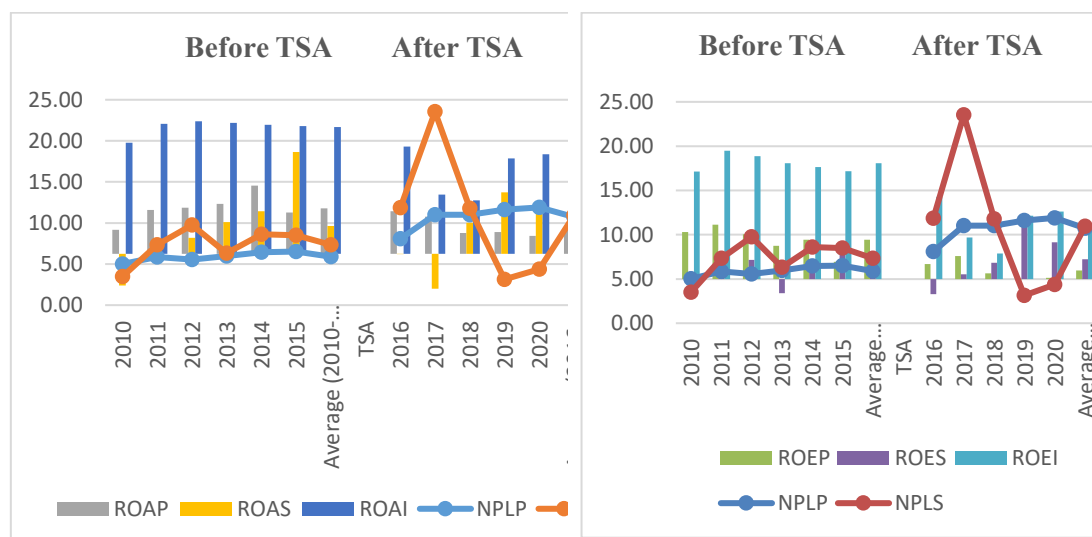
Note: ROAP = Return on Assets for Private Banks, ROAS = Return on Assets for State-Owned Banks, ROAI = Return on Assets for the Banking Industry, NPLP = Non-Performing Loans for Private Banks, NPLS = Non-Performing Loans for State-Owned Banks

Note: ROEP = Return on Equity for Private Banks, ROES = Return on Equity for State-Owned Banks, ROEI = Return on Equity for the Banking Industry, NPLP = Non-Performing Loans for Private Banks, NPLS = Non-Performing Loans for State-Owned Banks

Figure 4.3 above shows that private banks had recorded negative results for ROA, as evidenced by a decline of ROA from 0.89% to 0.55%. State-owned banks recorded the same movement, as evidenced by a decrease in ROA from 0.54% to 0.39%. Similarly, private banks' ROE declined from 4.44% to 0.97%. Contrariwise, state-owned banks' ROE increased from 1.08 to 2.22%. As explained in the former paragraph, it is noteworthy that the banking sector was characterized by a general decline in ROA and ROE. As such, private and state-owned banks were not exceptional as they also recorded a deteriorating performance after TSA adoption. The growth of NPLs and non-interest expenses were the major reasons for performance deterioration. Tables 4.11 and 4.16 provide evidence of the general increase in NPLs and cost-to-income ratio, respectively. It was also revealed that personnel expenses were rising, as reported in the 2020 financial sector supervision report. The personnel expense ratio to non-interest expense rose from 44.34% in 2016 to 50% in 2020. It is against this background that banks' profitability ratios declined after TSA adoption. During the post-TSA adoption period, the COVID-19 pandemic suppressed the world's economy. However, since the pandemic started in 2019, it is difficult to judge that the same had affected bank performance for the period under review. It should be appreciated that the present study covered eleven years from 2010 to 2020; hence, the pandemic has less to discuss bank performance in the study period.

Given the above, the results show that private banks outperformed state-owned banks in both periods (before and after TSA), only that after TSA, private banks' ROA deteriorated at a more significant percentage (62%) compared to state-owned banks (32%). In light of the above, the present study found that private banks outperformed

state-owned banks in both periods (before and after TSA) using ROA as an indicator of bank performance. In the same vein, private banks' ROE was above the state-owned ratio before TSA, implying that private banks outperformed state-owned banks during the period. In contrast, after TSA, the position changed as state-owned ROE was above private banks' ratio, implying that using ROE as an indicator, state-owned banks outperformed private banks' performance. However, during the post-TSA period, banks implemented the BOT's directive to raise capital from Tshs five billion to Tshs fifteen billion. For that reason, private banks' ROE might have declined due to more capital injection, thus bringing down the return on equity ratio, as evidenced in Table 4.9.

It is noteworthy that financial ratios can mislead users if they are not carefully examined since, occasionally, a change in the numerator or denominator may only occur once, which would alter how the ratio is interpreted. However, the eleven-year average ROE for private banks was still above the state-owned ROE. Private banks have recorded an overall average ROE of approximately 2.71% compared to 1.61% for state-owned banks. In light of the above, the present study concludes that private banks' performance superseded state-owned banks' performance due to low NPLs on private banks on one side and weak controls exercised by state-owned banks on the other side. The results are consistent with the study by Aminiel (2013) on Tanzania's banking sector performance, which concluded that private banks outperformed state-owned banks in terms of profitability. Cornett et al. (2009) came up with a consistent result as earlier studies that state-owned firms recorded lower profits than other firms. The researcher substantiated that for the four years i.e. the year 1997 to 2000 state-

owned banks had recorded lower performance than private banks for all countries which were hit by the financial crisis that had taken place in Asia. However, there was a performance shift in those banks after the crisis.

Moreover, the study by Shaban and James (2017) investigated Indonesian bank performance and risk exposure in response to changes in ownership using a sample of sixty (60) banks for eight years, i.e. from 2005 to 2012. State-owned banks were found to be highly exposed to risk and were low profitable as compared to foreign banks and private banks. Investors in the domestic country tend to acquire high-performing banks. Banks acquired domestically are more inclined toward low efficiencies, such as promoting their acquisition. On the other hand, to lower the risk exposure, non-regional foreign banks opt to acquire cross-border banks, whereas the focus of regional foreign investors centers on performance. In the same vein, Robin et al. (2018) examined the performance of the Bangladeshi banking sector with the ownership structure. The findings of this research supported earlier studies that state-owned banks had recorded lower performance in almost all the profitability indicators such as the return on Shareholders' fund or equity (ROE), return on banks' assets (ROA) as well as Net Interest Margin (NIM). Moreover, Su and He (2012) conducted a similar study and found consistent results.

4.7.1.2 The Influence of Ownership Concentration on Banks' Regulatory Performance

This sub-section links regression results and financial statements analysis. The combination of the two levels of analysis made the discussion interesting. Financial

statements analysis was used to complement and amplify regression results. The first part of the discussion covers regression analysis results, while financial statements analysis is covered in part two.

The discussion centers on the relationship between ownership concentration (domestic vs foreign banks) and (private vs (private vs state-owned-banks) and banks' regulatory performance. The CAMELS rating system has been used as a proxy for regulatory performance. Table 4.10 summarises the linear relationship between all independent variables (ownership concentration, bank characteristics, and industry and countrywide variables) and regulatory performance (CAMELS). The same table will be used to discuss regression results on bank characteristics and industry and countrywide variables on bank performance in sections 4.7.1.2 and 4.7.1.3 in subsequent paragraphs.

Table 4. 10: Linear Relationship Between Ownership Concentration, Bank Characteristics, Industry Specific and Country-wide variables and Banks' Regulatory Performance (CAMELS)

	Dependent Variable	
	CAMELS	
Variable	*Coefficient*	*Test Statistics*
LDROSIT	0.72	3.82***
		(0.000)
NPL	2.67	8.64***
		(0.000)
ASSET SIZE	0.00	–2.09**
		(0,037)
INTEREST RATE	–10.49	–3.97***
		(0.000)
1.FB#1.TSA	-0.19	–3.19***
		(0.000)
1. TSA#LDROSIT	-0.41	–2.31**
		(0.021)
1. TSA#ASSET SIZE	0.00	–3.86***
		(0.000)
1. TSA#INTEREST RATE	10.31	3.65***
		(0.000)
Overall R-squared	0.402	
R-squared between	0.584	
R-squared within	0.281	

Note that; *, **, and *** imply that the variable is statistically significant at 10%, 5%, and 1%significance levels. The panel data results are reported using t-statistics, whereby the p-values are put in parenthesis. FB=Foreign banks. Any variable named after a numeric coefficient (1.) represents a dummy variable. e.g. 1. TSA represents TSA as a dummy variable. Moreover, any variable tagged with # implies TSA interaction.

(i) **Regression Results on Ownership Concentration (Domestic vs Foreign Banks) and Private vs State-Owned Banks) and Banks' Regulatory Performance (CAMELS Ratings).**

As discussed in previous sections, ownership has been defined in bank origin (foreign or domestic) and shareholding structure, i.e. (private or state-owned). The latter acknowledged state-owned banks as banks whose majority shares are held by the treasury registrar of the government. Thus, dummy variables were used to express bank ownership such that for foreign banks, the variable was equal to 1 and zero (0)

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otherwise. In contrast, the variable equaled one (1) and zero (0) otherwise for private banks. It is imperative to note that CAMELS ratings are read in ascending order such that the lowest scale (1) represents strong performance, whereas the highest rating (5) means critical performance. In light of the preceding regression, results were interpreted similarly, such that a negative coefficient implies performance improvement, whereas a positive coefficient represents performance deterioration.

The regression results in Table 4.10 above show that foreign banks' performance had improved compared to domestic banks after TSA, as the effect was negative and statistically significant (-0.193, $p<0.01$). In contrast, the result was positive and statistically insignificant at a (coefficient of 0.109) before TSA, implying that whether with TSA or not, ownership had little influence on bank performance. The results for private and state-owned banks were not statistically significant, though private banks had recorded a negative coefficient before TSA, and the coefficient turned positive afterward. If performance was based on regression coefficients, we could conclude that private banks' performance had deteriorated relative to state-owned banks after TSA, whereas the impact was contrariwise before TSA.

(ii) **Financial Statements Analysis on Ownership Concentration (Foreign vs Domestic Banks) and (Private vs State-Owned Banks) and CAMELS Ratings**

In conjunction with regression results in Table 4.10 above, this study conducted a financial analysis to observe banks' regulatory performance trends before and after TSA adoption. The performance of domestic banks was compared to foreign banks, whereas private banks' performance was compared to state-owned banks. The

CAMELS rating system was used as a performance indicator. As highlighted in the previous paragraphs above, CAMELS ratings are read in ascending order from a rating of 1 to 5. The lowest rating implies strong performance, whereas the highest rating represents a critical or worst-case scenario. The ratings are highlighted as follows; Rating 1 means strong, rating 2 means satisfactory, rating 3 means marginal, rating 4 means unsatisfactory, and rating 5 means critical. Table 4.11 summarizes regulatory performance based on CAMELS ratings as highlighted above.

Table 4. 11: **Trend of Banks' Regulatory Performance in terms of Ownership Concentration (foreign vs. domestic Banks) and (Private vs. state-owned Banks)**

							Figures are in Numeric (Rating scale 1 to 5)							

YEARS	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	*Average (2010-2015)*	*2016*	*2017*	*2018*	*2019*	*2020*	*Average (201-2020)*	*Average difference*
COMPOSITE CAMELS RATING (D)	1.93	2.15	2.24	2.24	2.23	2.41	*2*	2.53	2.78	1.04	2.43	2.59	*3*	*-1*
COMPOSITE CAMELS RATING (F)	1.93	1.45	2.39	2.37	2.39	2.17	*2*	2.14	2.34	0.9	2.43	2.59	*2*	*0*
COMPOSITE CAMELS RATING (P)	2.16	2.4	2.4	2.5	2.4	2.28	*2*	2.37	2.54	2.54	2.9	2.48	*3*	*-1*
COMPOSITE CAMELS RATING (S)	2.06	2.19	2.65	2.53	2.77	2.75	*2*	2.84	3.08	2.5	2.31	2.78	*3*	*-1*

(D)=Domestic Banks, (F) = Foreign Banks, (S) = State-Owned Banks, (P) = Private Banks. Key: Rating 1 = Strong, Rating 2 = Satisfactory, Rating 3 = Marginal 4 means Unsatisfactory, Rating 5 means Critical

Table 4.11 above shows that the CAMELS rating for domestic, private, and state-owned banks had deteriorated from 2 (satisfactory performance) to 3 (marginal performance) after TSA. However, results for foreign banks remained almost constant at a satisfactory rate (2) for both periods, before and after TSA adoption. It should generally be appreciated that the overall banking sector performance had deteriorated after TSA adoption, as reported in numerous BOT publications. The 2015 financial sector supervision annual report shows the trend for five years (2011 -2015), whereas the 2020 report shows the trends from 2016 to 2020. After TSA adoption, banks' profitability, liquidity, and asset quality were highly impaired due to the withdrawal of government deposits from the commercial banking system. However, foreign banks' CAMELS rating remained satisfactory (2). The main reason is that most foreign banks were not the primary beneficiaries of free government deposits. In the same vein, foreign banks' deposit base was and is mainly contributed by private institutional depositors rather than government deposits. The IMF report on the performance of Tanzania's banking sector exposed that almost half of all banking institutions in Tanzania are CAMELS-rated 3, meaning that these banks have recorded a marginal version (IMF, 2018). The present study covering eleven years, i.e. the year 2010 to 2020, revealed that more than 75% of the banking institutions are CAMELS rated 3 by 2020. A similar study may be carried out after some time to check the long-term impact of TSA on bank performance.

However, comparing domestic and foreign banks' performance, as reported in Table 4.11 above before rounding up or down the decimal points, the results found that foreign banks had better ratings in both periods (before and after TSA adoption). The

results found that foreign banks recorded a satisfactory rating (2.08) after TSA compared to a marginal rating (2.57) for domestic banks. In light of the above, foreign banks outperformed domestic banks for several reasons. Foreign banks are most renowned for having a huge capital base, advanced technology, and highly skilled staff with expertise in the banking industry. As such, these foreign banks leverage these advantages to improve their performances.

Moreover, after TSA adoption, foreign banks were less affected by government withdrawal of deposits from the commercial banking system. Domestic banks were the primary beneficiaries of government deposits; thus, after TSA, their CAMELS rating deteriorated compared to foreign banks. The results are inconsistent with the study by (Aminiel, 2013 and Mkaro, 2011) to compare domestic and foreign banks in Tanzania using the CAMELS model. These results found that domestic banks outperformed foreign banks during the period under review. The authors argued that foreign banks were incurring considerable expenses to pay foreign experts and other highly skilled local personnel, thus cutting their profits.

Moreover, foreign banks were considered less familiar with the local market; thus, foreign banks' entry strategies were outshined by those used by local banks. However, it has been a very long while since the above studies were carried out. The reason for the change in performance can be explained in several ways. First and foremost, adopting the TSA system had largely affected domestic banks more than foreign banks because domestic banks were the primary beneficiaries of government deposits. Moreover, old foreign banks operating in Tanzania have already familiarized

themselves with the banking business in Tanzania. Most foreign banks have copied and modified local banks' strategies to win the market. The study revealed that most foreign banks have also penetrated the retail market instead of their initial entry strategies. In the same vein, foreign banks are now leveraging on local experts to help them blend foreign and local expertise, thus outshining domestic banks. However, the study proposes that a similar analysis may be carried out to assess the long-run implication of the factors above on domestic and foreign banks' performance.

For the case of private and state-owned performance, the results in Table 4.11 provide valuable insights into the CAMELS ratings. Both private and state-owned performances have deteriorated from 2 (satisfactory level) to 3 (marginal level). However, using the rating before rounding up and down the decimals, we find that private banks outperformed state-owned banks in both periods (before and after TSA adoption) due to their better ratings than state-owned banks. The results found that private banks recorded a 2.57 rating after TSA, while state-owned banks had a 2.70 rating. The above implies that private banks had outperformed state-owned banks after TSA adoption. As highlighted in the previous sections, state-owned banks were the primary beneficiaries of government deposits; thus, the withdrawal of government deposits primarily affected banks' liquidity position and asset quality due to high NPLs in the banking sector. Eventually, banks' profitability and capital have been significantly affected. The industry has witnessed the merger of three state-owned banks, of which two among the merged banks (Tanzania Women's Bank and Twiga Bancorp) were in critical condition. As a rescue strategy, the two banks merged with Tanzania Postal Bank to form one giant state-owned bank, later renamed Tanzania

Commercial Bank (BOT, 2018). These results are consistent with the study by Aminiel (2013), who found that privately owned banks in Tanzania had recorded superior CAMELS ratings than state-owned banks.

Generally, few studies have attempted to apply the CAMELS model to measure bank performance. Moreover, to the best of the researcher's knowledge, there is also a worldwide knowledge gap on how the final CAMELS rating is calculated because a significant number of studies that have attempted to use the CAMELS model have not performed the CAMELS rating. Most of them have merely analyzed and discussed CAMELS ratios, thus creating a gap in the body of knowledge on how the final CAMELS rating is computed. Examples of studies that have applied CAMELS ratios without calculating the final CAMELS rating are Dinku (2018) and Madishetti (2013). Moreover, these studies were generalized to discuss bank performance without particularizing the same on bank classifications. The present study has therefore addressed this gap by applying the CAMELS rating to measure bank performance. The same is an extension of the study by Aminiel (2013) and Mkaro (2011) who attempted to apply CAMELS ratings to assess bank performance in Tanzania. It should be appreciated that previous studies have used traditional profitability ratios to measure bank performance for several years. Therefore, the present study opens the doors for other researchers to familiarize themselves with the CAMELS rating system to measure bank performance.

4.7.1.3 The Influence of Ownership Concentration on Banks' Management Performance

This section discusses how ownership concentration affected banks' management performance. As mentioned in earlier sections, the cost-to-income ratio served as a proxy for assessing management performance. Table 4.12 shows the regression results for the management performance. The same table shows the overall regression results for bank characteristics and industry and country-wide variables on banks' management performance. These two variables are discussed in subsequent sections. The cost-to-income ratio was used as a proxy for management performance.

Table 4. 12: Linear Relationship Between Ownership Concentration, Bank Characteristics, Industry Specific and Country-wide Variables and Banks' Management Performance

	Dependent Variable	
	Cost to income	
Variable	*Coefficient*	*Test Statistics*
LDR	4.73	2.34**
		(0.019)
1. PRIVATE#1.TSA	3.33	2.08**
		(0.038)
1.TSA#LDR	-5.16	-1.79*
		(0.073)
1. TSA#INFLATION	-18.43	-1.80*
		(0. .072)
Overall r-squared	0.047	
R-squared within	0.045	
R-squared between	0.060	

Note that: *, **, and *** imply that the variable is statistically significant at 10%, 5%, and 1% significance levels. The panel data results are reported using t-statistics, whereby the p-values are put in parenthesis. Any variable named after a numeric coefficient (1.) represents a dummy variable. E.g. 1. TSA represents TSA as a dummy variable. Moreover, any variable tagged with # implies TSA interaction.

(i) Linear Relationship Between Ownership Concentration and Banks' Management Performance

Ownership has been defined in bank origin (foreign or domestic) and shareholding structure, i.e. (private or state-owned). The latter acknowledged state-owned banks as banks whose majority shares are held by the treasury registrar of the government. Thus, dummy variables were used to express bank ownership such that for foreign banks, the variable was equal to one (1) and zero (0) otherwise. In contrast, the variable equaled 1 and zero (0) otherwise for private banks.

In terms of ownership structure, regression results show that private banks had recorded positive and statistically significant results (3.333, $p<0.05$) after TSA, but the impact was statistically insignificant by a coefficient of (-0.039) before TSA. The above draws evidence that private banks' cost-to-income ratio had increased relative to state-owned banks' ratio, implying that private banks' management performance had deteriorated after TSA adoption. In contrast, state-owned banks' management performance had improved. Table 4.13 provides strong evidence of a higher cost-to-income ratio for private banks compared to state-owned banks after TSA.

Contrariwise, private banks' management performance was in good shape before TSA compared to state-owned banks. This is because state-owned banks were not so efficient in terms of cost management during the pre-TSA period. After TSA, the government cut down unnecessary expenditures, and the discipline in running government institutions was highly exercised compared to the pre-TSA period. This has been evidenced in Table 4.13 by a lower cost-to-income ratio for private banks

compared to state-owned banks during the pre-TSA adoption period. As such, the results show that after TSA adoption, state-owned banks' management performance was better off than private banks' counterparties.

The effects on foreign and domestic banks were not statistically significant; however, the results show negative coefficients of (–0.221 and –1.266) before and after TSA, respectively, only that the magnitude of the impact increased after TSA. The above implies that foreign banks' cost-to-income ratio was lower than domestic banks' in both periods, before and after TSA. However, after TSA adoption, the foreign banks' ratio was even lower than the domestic banks'. In view of the above, the results provide evidence that foreign banks' management performance was better than domestic banks in both periods (before and after TSA), as evidenced by cost-to-income ratios in Table 4.13. The reason for a better foreign banks' management performance ratio could be because foreign banks are keen to make a profit due to the risk they take to invest overseas. This does not mean that domestic banks are reluctant; however, foreign investors are so sensitive not to fail the business due to the risk they take to invest across borders, as such cost-cutting might be used as one of their key strategies. However, there is solid evidence that TSA negatively affected cost-to-income ratios for domestic and foreign banks, as evidenced by an increase in cost-to-income ratios in Table 4.13. Domestic banks' ratio increased from 452% to 999%, whereas foreign banks' ratio increased from 315% to 784%, implying that TSA negatively impacted banks' management performance. This is because banks were incurring huge non-interest expenses to turn around the business during the post-TSA adoption period. NPLs and bad debt provisions were very high, as the overall GDP growth rate had

declined, and the private sector was suppressed due to low business and customer purchasing power. During this period, the government shifted its focus from focusing on recurring expenditures and switched its attention to development expenditures. As a result, money circulation in the economy was highly impaired.

(ii)   Financial Statement Analysis on Ownership Concentration (foreign vs. domestic Banks) and (Private vs. state-owned Banks) and Bank Management Performance

In general, financial statements analysis was carried out to observe the trend of bank performance before and after TSA adoption. Table 4.13 shows that except for state-owned banks whose cost-to-income ratio declined, the rest of the bank classifications (domestic, foreign, and private banks) had recorded an upward movement after TSA adoption. The decline in the cost-to-income ratio for state-owned banks implies an improvement in management performance because the management was able to control costs satisfactorily. However, the ratio had improved due to the merger between three state-owned banks, Twiga Bancorp, Tanzania Women's Bank, and Tanzania Postal Bank, thus enhancing the performance of these banks. For the rest of the bank categories, the ratio increased significantly, implying that TSA had negatively affected management performance in these banks. It should be appreciated that banks were struggling to turn around the business and recover NPLs hence, operating costs were rising during the post-TSA implementation period. Table 4.13 summarizes banks' management performance. Moreover, a more detailed discussion is presented immediately after Figure 4.13.

Table 4. 13: Trend of Management Performance with Ownership Structure

		Before TSA						After TSA						
Years	2010	2011	2012	2013	2014	2015	Average (2010–2015)	2016	2017	2018	2019	2020	Average (2016-20)	Average difference
COST TO INCOME RATIO (D)	469	-33	43	390	959	884	*452*	299	1596	2234	650	218	*999*	*-547*
COST TO INCOME RATIO (F)	427	181	130	643	765	-256	*315*	1544	1537	123	347	371	*784*	*-469*
COST TO INCOME RATIO (P)	380	128	186	420	605	578	*383*	155	1882	3250	189	345	*1164*	*-781*
COST TO INCOME RATIO (S)	973	-265	-250	697	2122	840	*686*	226	-101	52	108	120	*81*	*605*

Figures in Percentage Form (%)

(D) = Domestic Banks, (F) = Foreign Banks, (P) = Private Banks, (S) = State-Owned Banks

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Figure 4.4 summarizes the trend of the cost-to-income ratio for both bank origin (foreign versus domestic banks) and ownership composition (private versus state-owned banks) before and after TSA.

Figure 4. 4: **Trend of Cost to Income Ratio for (Domestic Versus Foreign Banks) and (Private Versus State-Owned Banks)**
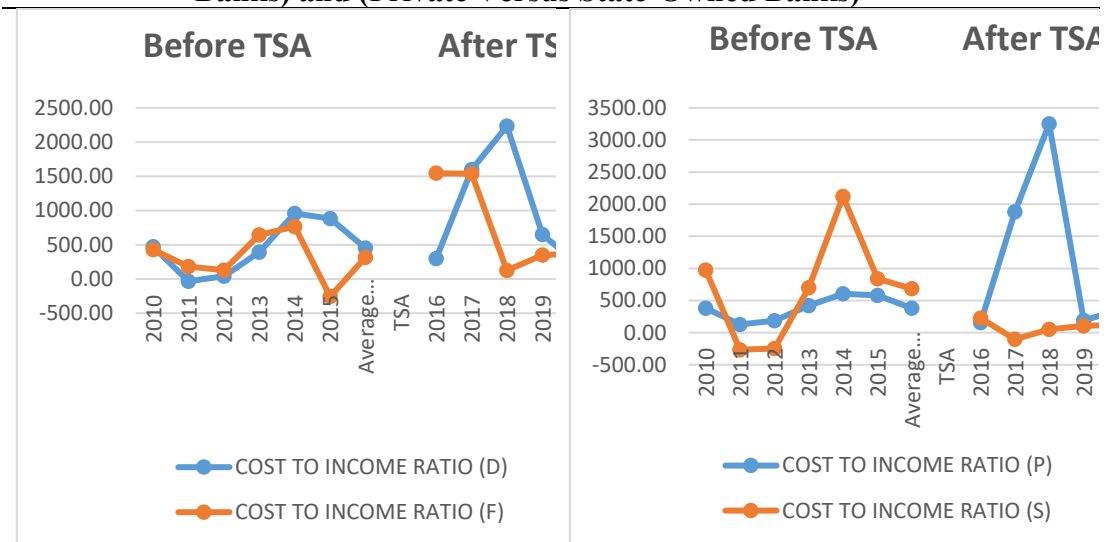
D=Domestic Banks, F = Foreign Banks   P = Private Banks, S = State –Owned Banks

Figure 4.4 above shows that domestic banks' cost-to-income ratio was double the ratio recorded before TSA. The ratio increased from 452% before TSA to 999% after TSA compared to foreign banks, whose ratio increased from 315% to 784% after TSA. This implies that both domestic and foreign banks' cost-to-income ratios were negatively affected after TSA as they recorded an upward movement. Nevertheless, the cost-to-income ratio for foreign banks remained lower than that of domestic banks. This suggests that the management performance of foreign banks was superior to that of domestic banks. As highlighted above, a better foreign banks' management performance ratio could be due to the fact that foreign banks are keen to make a profit

due to the risk they take to invest overseas. This does not mean that domestic banks are reluctant. However, foreign investors are sensitive not to fail the business due to the risk they take to invest across borders; as such, cost-cutting might be used as one of their key strategies. For the case of private banks, the ratio increased from 383% before TSA to 1164% after TSA, as opposed to state-owned banks, whose ratio decreased from 686% to 81% after TSA. This implies that after TSA, state-owned banks' management performance was better than private banks' performance. Tables 4.11 and 4.19 provide evidence for the general increase in NPLs and the cost-to-income ratios for all banks, respectively. It was also revealed that the increased cost-to-income ratio was mainly attributed to the increase in personnel expenses, as reported in the 2020 financial sector supervision report. The personnel expense ratio to non-interest expense rose from 44.34% in 2016 to 50% in 2020. Against this background, except for state-owned banks, which recorded a declined stance, all other bank categories had recorded increased cost-to-income ratios. A decline in the state-owned ratio resulted from the merger between three state-owned banks, thus cutting down the cost-to-income ratio. Therefore, TSA has negatively impacted domestic, foreign, and private banks, while the impact was positive on state-owned banks. All other banks had recorded an upward movement of the cost-income ratio, whereas state-owned banks recorded a declined stance.

4.7.2   Relationship Between Bank-Specific Characteristics and Performance

Bank-specific characteristics have been defined in two forms (bank size and bank risks). Asset size was used as a proxy for bank size, whereas Gross Loans to total deposits and NPL ratios were used as proxies for banks' risks. Moreover, financial statements analysis was carried out to observe the trend of bank performance before and after TSA adoption. Figures 4.4 and 4.5 show the trend of large and small banks' performance before and after TSA. Return on Asset (ROA), Return on Equity (ROE), and Net Interest Margin (NIM) were used as performance indicators.

4.7.2.1 Relationship Between Bank Size and Performance

Bank performance is discussed threefold. The first part covers financial performance (ROA, ROE, and NIM), whereas the second part covers regulatory performance (CAMELS ratings) and the last part covers management performance (Cost-to-Income-Ratio).

4.7.2.1.1   Relationship Between Bank Size and Financial Performance

This subsection discusses results in two-fold. The first part discusses regression results on bank performance, whereas the second part discusses the results of financial statements analysis. However, the discussion establishes connections between the regression results and the analysis of financial statements to justify the obtained results.

(i) Regression results on Asset Size and Bank Financial Performance (ROA, ROE, and NIM)

In general, the effect of bank size (measured by asset size) on bank performance using ROE as an indicator was positive and statistically significant (6.05e-14, $p<0.05$) before TSA but negative and statistically significant (-1.83e-14, $p<0.05$) after TSA. In the same vein, the effect of bank size on ROA was consistent with that of ROE, as the coefficient was positive and statistically significant (2.74e-08, $p<0.1$) before TSA but became negative and statistically significant (-9.62e-09, $p<0.1$) after TSA adoption. The above can be explained in terms of asset growth, mainly due to the growth of gross loans and NPL ratios. A positive relationship before TSA implies that a 1% increase in asset size increases ROA and ROE by the abovementioned coefficients. Comparing the NPLs ratio before and after TSA, the study found that the NPLs ratio before TSA was low at 7.69% compared to 10.46% after TSA. This implies that as the asset grows due to an increase in gross loans, banks' profitability is not highly impaired due to the low NPLs ratio. That is why, as asset size increases, profitability ratios increase as well. Contrariwise, the negative regression coefficients for ROA and ROE after TSA imply that ROA and ROE declined by the abovementioned coefficients as asset size increased by 1%. The decline of ROA and ROE is attributed to a general increase in bad and doubtful debt provision and non-interest expenses such as NPLs and the like.

A review of several Financial Sector Supervision Annual reports provides evidence of a general decline in the banking sector's ROA and ROE after TSA adoption. As highlighted above, the industry NPLs ratio had also increased from 7.69% recorded before TSA to 10.46% after TSA, thus bringing down profitability ratios. However,

the results of the present study are contrary to Olaoye and Talabi (2019), who studied TSA's impact on bank performance in Nigeria's systemic important banks. It was revealed that though TSA's impact on ROE was not significant, there was a positive relationship between TSA and ROE, such that after TSA adoption, ROA and ROE had slightly improved compared to the period before TSA.

Regarding NIM, the results show that Net Interest Margin has improved after TSA adoption. It has been observed that regression results on NIM were positive and statistically significant (1.23e-14, $p<0.1$) after TSA but negative and insignificant before. The positive coefficient following the implementation of the Treasury Single Account (TSA) suggests that the Net Interest Margin (NIM) of large banks increased in comparison to small banks. A 1% increase in asset size corresponded to an increase in NIM, approximately 1.23e-14 per cent. Financial analysis in Table 4.14 shows that significant banks' NIM rose from 3.57% to 3.73%, thus justifying the above-highlighted regression results. The increase in NIM after TSA is attributed to large banks not being the primary beneficiaries of government deposits because more than 80% of large banks are foreign-owned. The government deposits were more inclined toward domestic banks than foreign counterparties. For that reason, the withdrawal of government deposits did not primarily affect large banks' NIM.

(ii) Financial Statements Analysis on Bank Size (Large Vs Small Banks) and Bank Performance

In conjunction with the above regression analysis, the financial analysis results also found that both large and small banks in totality have consequently experienced a

deterioration of profitability due to the growth of NPLs and non-interest expenses. The 2021 BOT public notice on NPLs revealed that some staff of various banking institutions had recklessly engaged themselves in issuing loans by circumventing the required loan-issuing procedures. The notice points out that these staff have been fraudulently engaging in such practices, thus putting their integrity under questionable circumstances. By so doing, the loan default rate had largely increased as customers could not repay the loans as scheduled, thus leading to high NPLs and, eventually, low profitability, as summarized in Table 4.14.

Table 4. 14: Trend of Large and Small Banks' Financial Performance

Years	2010	2011	2012	2013	2014	2015	Average (2010-2015)	2016	2017	2018	2019	2020	Average (2016-2020)	Average difference
						Figures in Percentage (%)								
ROAL	1.73	1.85	1.68	1.49	1.95	1.69	*1.73*	0.81	1.46	1.11	1.31	1.19	*1.18*	0.55
ROAS	2.61	3.16	2.66	3.03	4.03	4.1	*3.27*	2.19	2.03	2.01	1.94	2.13	*2.06*	1.21
ROAI	2.16	2.53	2.58	2.55	2.51	2.49	*2.47*	2.09	1.15	1.04	1.86	1.94	*1.62*	0.85
ROEL	9.51	11.71	8.96	8.02	10.5	8.16	*9.48*	0.94	6.59	4.86	6.08	4.84	*4.66*	4.82
ROES	19.23	20.86	16.47	-10.96	17.78	21.4	*14.13*	7.44	9.74	7.5	2.63	3.83	*6.23*	7.9
ROEI	12.13	14.47	13.88	13.08	12.64	12.16	*13.06*	9.26	4.67	2.88	7.13	7.61	*6.31*	6.75
NIML	3.11	3.2	3.63	3.77	3.97	3.75	*3.57*	3.72	4.02	3.69	3.6	3.59	*3.73*	-0.16
NIMS	10.88	11.87	13.65	14.19	14.5	14.47	*13.26*	12.92	13.27	13.66	12.85	11.39	*12.82*	0.44
NIMI	6.46	7.17	7.81	8.25	8.37	8.19	*7.71*	8.12	7.42	7.01	6.21	5.85	*6.92*	0.79

Note: ROA=Return on Asset, ROE = Return on Equity, NIM = Net Interest Margin, where L = Large Banks, S = Small Banks, I = Industry Average Ratio

Table 4.14 above shows that except for large banks' net interest margin that had recorded an upward movement after TSA, all other variables have declined after TSA adoption. Figure 4.5 shows the trend of ROA and ROE for large and small banks.

Figure 4. 5: Trend of ROA and ROE for Large and Small Banks
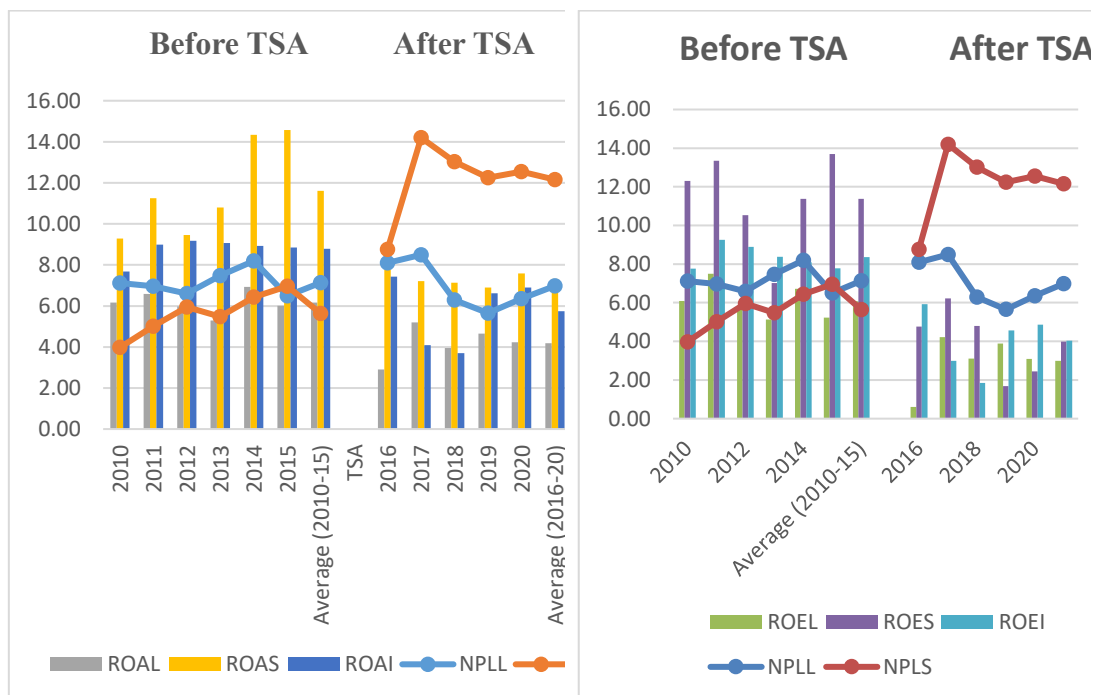
Return on Asset for Large Banks, ROAS=Return on Asset for Small Banks, ROAI=Return on Asset for the Banking Industry, NPLL =Non-Performing Loans Ratio for Large Banks, NPLS = Non-Performing Loan Ratio for Small Banks

ROEL=Return on Asset for Large Banks, ROES=Return on Equity for Small Banks, ROEI=Return on Equity for the Banking Industry, NPLL =Non-Performing Loan Ratio for Large Banks, NPLS = Non-Performing Loans Ratio for Small Banks

Figure 4.5 above provides a clear summary of the sector's performance. During the TSA adoption period, NPL rose from single-digit to double-digit, justifying that loans were highly impaired, such as deteriorating ROE and ROA, as evidenced in Figure 4.4 above. Moreover, after TSA's adoption, the banking sector was characterized by a

general increase in non-interest expenses that eroded profitability. The financial analysis results confirm the negative regression coefficient after TSA adoption. In light of the above results, the study found that small banks' ROA and ROE superseded large banks' ratios in both periods (before and after TSA adoption). The study found that small banks outperformed large banks using ROA and ROE as performance indicators.

The above-mentioned results are aligned with the verdicts by Panagiotis et al. (2018), who came up with divergent results about bank size and efficiency. It was revealed that numerous studies have revealed the presence of lower economies of scale for small banks as compared to large banks. In their study, the researchers concentrated on the negative aspects associated with the size of the bank, particularly in terms of cost management and monitoring. The results show an inverse relationship between the size of a bank and its market value to assets book value, such as making a U-shape kind of relationship. The preceding findings reveal that the cost of monitoring those banks offsets the advantages that large banks obtain due to economies of scale. This can be primarily attributed to the necessity for large banks to delegate certain roles to managers, assisting owners and senior management in overseeing business operations and closely monitoring borrowers. In turn, monitoring costs can outweigh large banks' benefits from economies of scale.

In the same vein, the results of the present study are also contrary to the efficiency structure theory that advocates that more efficient banks can make an attractive profit than the less efficient ones. On top of that, the theory amplifies that small banks make less profit than large banks because small banks have a less superior structure of

management and low technological advancement, such as having high operational costs compared to large banks (Soana, 2011). The present study yielded contrary results because small banks' ROA and ROE recorded superior results compared to large banks, as summarized in Figure 4.5 and Table 4.14 above.

In terms of NIM, the positive performance of large banks after TSA was mainly because foreign banks are the dominants in the large banks' category in Tanzania, and because foreign banks' NIM increased from 3.60% to 3.94%, there is a reasonable justification for an increased NIM for large banks. In the same vein, it should be appreciated that foreign banks were not the primary beneficiaries of government deposits compared to domestic banks. The withdrawal of government deposits from the commercial bank system had not significantly affected large banks' deposit base. Figure 4.6 shows the trend of NIM for large and small banks.

Figure 4. 6: Trend of NIM for Large and Small Banks
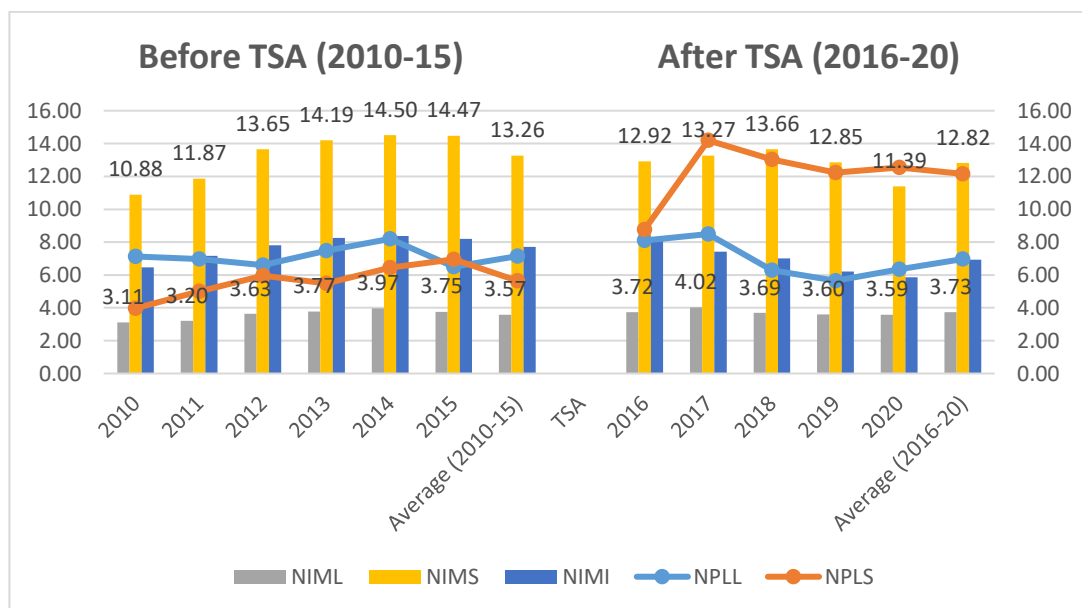
Figure 4.6 above shows that large banks' NIM rose from 3.57% to 3.73%, whereas small banks NIM declined from 13.26% to 12.82% though the magnitude of the difference was not enormous. For similar reasons, a notable proportion of these small and medium-sized banks had relied on government deposits. Consequently, the withdrawal of these deposits resulted in a kind of liquidity squeeze for these banks. However, recording a high NIM ratio could not primarily be attributed to performance but on a statistical basis. If the numerator (bank asset) is low while the denominator (net interest income) is high, the result will record a high NIM. Hence, since small banks have small assets, the chances for them to record attractive NIM are high in case the banks are efficient in issuing loans.

On the other hand, in the case of large foreign banks, it was revealed that they have multiple deposit sources from corporate clients (institutional depositors) and foreign investors, making them less affected by TSA adoption. A review of the BOT Financial Sector Supervision Report (2020) shows that NIM was less dramatic after TSA. Given the above, the study found that the summary provided in Figure 4.5 and Table 4.14 is consistent with regression results in Table 4.8 above, showing that large banks' performance using NIM as a performance indicator had improved relative to small banks' NIM after TSA adoption.

Nevertheless, the present study found that small banks' NIM was still above large banks' ratios in both periods (before and after TSA adoption); the study concluded that small banks outperformed large banks during the period under review. In light of the above, it is imperative to note that, apart from statistical significance in regression

analysis, the result of the financial analysis shows that ROA, ROE, and NIM for small banks were above large banks' ratios in both periods (before and after TSA adoption) as summarized in table 4.14 above.

The results are inconsistent with the efficiency theory, which advocates that large institutions enjoy economies of scale compared to small institutions. The study by Panagiotis et al. (2018) came up with divergent results about bank size and efficiency. It was found that numerous studies have revealed the presence of lower economies of scale for small banks as compared to large banks. In their study, they focused on the disadvantageous side posed by the size of the bank in terms of cost management and monitoring. The results show an inverse relationship between the size of a bank and its market value to assets book value, such as making a U-shape kind of relationship. The preceding findings reveal that the cost of monitoring those banks offsets the advantages that large banks obtain due to economies of scale. This is primarily attributable to the fact that large banks need to delegate some roles to managers to help the owners and senior management run the business and to make a close follow-up with borrowers. In turn, monitoring costs can outweigh large banks' benefits from economies of scale.

However, to the best of the researcher's knowledge, no study has so far attempted to examine the influence of TSA and bank size on bank performance. Previous studies have tried to discuss the widespread impact of bank size and bank performance as a whole; as such, the present study found these studies helpful to draw references from. Studies by Acaravci and Çalim, 2013; Aminiel, 2013; Bougatef, 2017; Chowdhury

and Rasid, 2017; Masood and Ashraf, 2012; Petria et al., 2015; Singh and Sharma, 2016; had reported a positive influence of banks size on the performance of banking institutions. However, studies by Gul et al. (2011) and Singh and Sharma (2016) reported a negative influence of bank size on banks' performance. The present study has also found diverse outcomes, as regression results were either positive or negative depending on the period covered (before or after TSA adoption). Given the above, the study rejects the null hypothesis, which says the influence of bank characteristics (bank size in this case) has no impact on bank performance before and after TSA adoption. The study found a significant negative relationship between bank size and bank performance after TSA, as presented above.

4.7.2.1.2 Relationship Between Bank Size and Regulatory Performance

This subsection discusses results in two-fold. The first part discusses regression results on bank performance (CAMELS regression results), whereas the second part discusses the results of financial statements analysis (CAMELS ratings). To enhance the analysis's interest and depth, the results establish a connection between the regression outcomes and the discussion, linking them to the analysis of financial statements to provide a thorough justification for the results.

(i) Linear Relationship Between Bank Size and Regulatory Performance (CAMELS)

The results for bank size were negative and statistically significant ($-1.38\text{e-}13$, $p<0.05$) before TSA, and the impact remained negative and statistically significant ($-1.49\text{e-}13$, $p<0.01$) afterward. The negative coefficient implies that a one percent

increase in banks' assets brings about a decline in CAMELS rating, thus improving bank performance. As highlighted in the previous paragraphs above, CAMELS ratings are read in ascending order from a rating scale of 1 to 5. The lowest rating implies strong performance, while the highest rating represents a critical or worst-case performance. Just to refresh from the previous paragraphs, the CAMELS ratings are highlighted as follows; Rating 1 means strong, rating 2 means satisfactory, rating 3 means marginal, rating 4 means unsatisfactory, and rating 5 means critical.

Regarding the regression results, the findings indicate a magnification of the negative coefficient after the implementation of the Treasury Single Account (TSA). This implies that large banks sustained their outperformance over small banks even in the post-TSA period. The study rejects the null hypothesis, which states that the influence of bank size has no significant impact on bank performance before and after TSA adoption. The above regression results show a strong association between bank size and performance. A detailed discussion is presented in subsequent paragraphs.

(i) **Financial Statements Analysis on Bank Size and Regulatory Performance (CAMELS)**

In conjunction with regression results in Table 4.12 above, a financial analysis was conducted to observe the trends of large and small banks' regulatory performance before and after TSA adoption as such, the performance of large banks was compared to small banks using the CAMELS rating system. Table 4.15 and Figure 4.9 present the trend of regulatory performance for large and small banks using CAMELS ratings as performance indicators.

Table 4. 15: Trend of Large and Small Banks' Regulatory Performance

YEARS	2010	2011	2012	2013	2014	2015	Average (2010-2015)	2016	2017	2018	2019	2020	Average (2016-2020)	Average difference
Figures are in Numeric (Rating scale 1 to 5)														
COMPOSITE CAMELS RATING (L)	2.01	2.29	2.19	2.19	2.1	2.42	*2.2*	2.38	2.05	0.96	2.33	2.37	*2.01*	0.19
COMPOSITE CAMELS RATING (S)	2.03	2.31	2.66	2.6	2.7	2.56	*2.48*	2.65	2.82	1.07	3	3.06	*2.52*	-0.04

Note: (L) = Large Banks, (S) = Small Banks. Key: Rating 1 = Strong, Rating 2 = Satisfactory, Rating 3 = Marginal, Rating Unsatisfactory, Rating 5 means Critical

In conjunction with Table 4.15 above, figure 4.7 provides a summarized trend of CAMELS rating for large and small banks for ease of visibility and interpretation.

Figure 4. 7: CAMELS Rating for Large and Small Banks
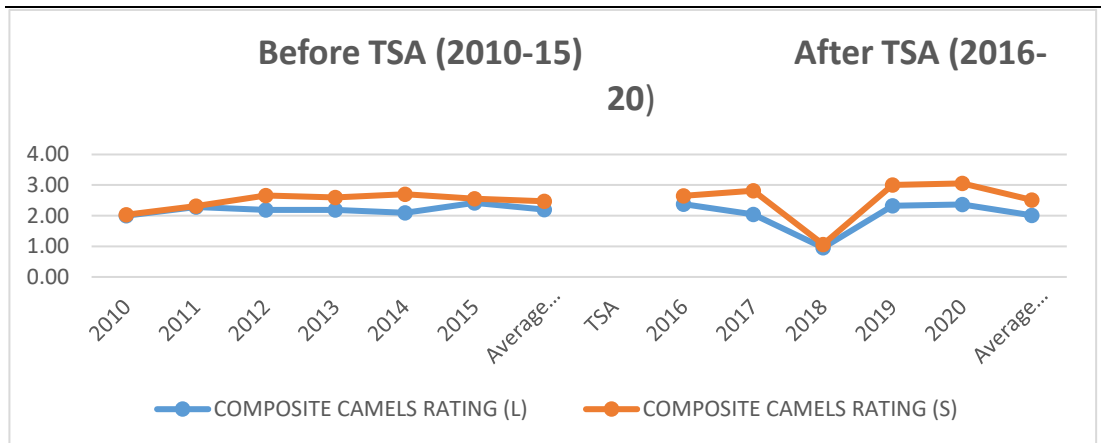
Composite CAMELS Rating (L) = Large Banks, Composite CAMELS Rating (S) =Small Banks

Figure 4.7 above shows that the CAMELS rating for large banks remained stable at a satisfactory level as the same had recorded a satisfactory rating (2) in both periods, i.e., before and after TSA adoption. On the other hand, small banks' rating deteriorated from a satisfactory level (2) to a marginal level (3) after TSA adoption. The stability of large banks' ratings can be explained in several ways. Large banks have experienced personnel compared to small banks. Hence, during the TSA period, management teams of large banks were keen to keep bank performance at the desired state.

Moreover, a significant portion of large banks is formed by foreign banks with solid management teams and robust risk management systems and policies to curb any calamity in the course of business. In the case of small banks, the performance had deteriorated from satisfactory to marginal on account of numerous factors. After TSA's adoption, the general banking industry was shacked. The sector witnessed a general decline in liquidity, profitability, asset quality, and capital adequacy. During this period, five small banks were in poor performance shape, and the same had an inherent bad history of poor performance even before TSA adoption. Some banks shut down operations, whereas others merged with large banks. Tanzania Women's Bank and Twiga Bancorp merged with Tanzania Postal Bank, later renamed Tanzania Commercial Bank. The withdrawal of government funds from circulation was another primary reason that silenced bank performance. It should also be appreciated that towards the middle of 2019, the whole world was struggling with the COVID-19 pandemic. Businesses worldwide were in shamble and struggling for a turnaround. In light of the mentioned factors, all weak banks, in addition to the challenges posed by the Treasury Single Account (TSA), were further constrained by the pandemic and were unable to achieve satisfactory performance levels.

Moreover, lending to the private sector was down until the Central Bank of Tanzania intervened by issuing a circular on how to boost lending to the private sector. It was during the same period when asset quality was highly impaired due to a rise in NPLs. As a result, the Bank of Tanzania issued a circular addressing, among other things, measures to boost lending to the private sector while simultaneously controlling NPLs (BOT, 2018). The results of the present study are inconsistent with the study by

Aminiel (2013), who analyzed large and small banks' performance. His study found that small banks had better CAMELS ratings than large banks. The study by Panagiotis et al. (2018) came up with divergent results about bank size and efficiency. It was found that numerous studies have revealed the presence of lower economies of scale for small banks as compared to large banks. In their study, they focused on the disadvantageous side posed by the size of the bank in terms of cost management and monitoring. The results show an inverse relationship between the size of a bank and its market value to assets book value, such as making a U-shape kind of relationship. As such, findings revealed that the cost of monitoring those banks offsets the advantages that large banks obtain due to economies of scale. This is primarily attributed to the fact that large banks will need to delegate some roles to managers to help the owners and senior management run the business and to make a close follow-up with borrowers. In turn, monitoring costs can outweigh large banks' benefits from economies of scale.

The results are also consistent with the study by Seyed et al. (2019). They used a non-parametric method to study the USA's large commercial banks' efficiency before and following the world financial crisis of 2008. The study shows the importance placed on large banks' efficiency. It was revealed that the risk-taking attitude and the structures of the portfolio of USA large banks have changed after the crisis. Efficiency measures are allocative efficiency, scale efficiency, pure technical, and overall technical efficiency. Large USA banks had recorded a decline in efficiency level during the crisis, and ever since the crisis occurred, the banks' efficiency has not recovered to the level before the crisis.

4.7.2.1.3   Relationship Between Bank Size and Management Performance

This subsection discusses results in two-fold. The first part discusses regression results on bank performance (Cost-to-Income-Ratio regression results), whereas the second part discusses the results of financial statements analysis. To add depth and interest to the analysis, the discussion establishes a connection between the regression results and financial statements analysis, thereby providing a justifiable rationale for the obtained results.

- **Relationship Between Bank Size and Management Performance**

The impact of bank size on the cost-to-income ratio was not statistically significant in both periods (before and after TSA adoption), implying that bank size and TSA didn't directly impact banks' management performance. However, in conjunction with regression results in Table 4.12 above, financial statement analysis was conducted to observe the trend of management performance for large and small banks. The cost-to-income ratio was used as a proxy for management performance. Though regression analysis had recorded statistically insignificant results, the financial statement analysis shows an indirect negative impact on management performance, as evidenced by an increase in the cost-to-income ratio for both large and small banks after TSA adoption. However, before TSA, large banks had recorded a lower cost-to-income ratio of 253% compared to 926% for small banks. The above implies that large banks' management performance was better off than small banks' performance. Contrariwise, small banks had recorded a lower ratio after TSA adoption than large banks. Table 4.16 shows that small banks' cost-to-income ratio was 1141% compared to 1208% for large banks, implying that after TSA adoption, small banks' management performance was better

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off than large banks' performance. This can be explained on the grounds that several small banks with poor performance had failed, and the central bank confiscated their banking license in 2018, thus reducing the impact of an adverse cost-to-income ratio on the remaining banks. Small banks that were closed are Meru Community Bank Limited, Efatha Bank Limited, Covenant Bank for Women Limited, Kagera Farmers', Njombe Community Bank Limited, and Cooperative Bank Limited. However, TSA generally came with an increased cost-to-income ratio for both large and small banks, implying that management performance had deteriorated due to TSA adoption. Table 4.16 summarizes management performance trends for large and small banks before and after TSA adoption.

Table 4. 16: Trend of Management Performance for Large and Small Banks

	Figures in Percentage Form (%)													
	Before TSA							After TSA						
Years	2010	2011	2012	2013	2014	2015	Average (2010-15)	2016	2017	2018	2019	2020	Average (2016-20)	Average difference
COST TO INCOME RATIO (L)	124	118	176	290	807	161	*253*	57	456	5240	287	773	*1208*	*955*
COST TO INCOME RATIO (S)	642	851	866	1737	1459	1068	*926*	1527	1661	508	2008	737	*1141*	*215*

(L) =Large Banks, (S) = Small Bank

4.7.2.2 Relationship Between Bank Risks and Performance

Bank performance is discussed threefold. The first part covers financial performance (ROA, ROE, and NIM), whereas the second part covers regulatory performance (CAMELS ratings) and the last part covers management performance (Cost-to-Income-Ratio). The two risks (credit and liquidity risks) are the two risk indicators that have been discussed in this section.

Generally, this section discusses the influence of risk and banks' financial performance before and after TSA adoption. As pointed out in previous subsections, NPL was used as a proxy for credit risk, whereas the gross loans to total deposits ratio was a proxy for liquidity risk. To add depth and interest to the analysis, the discussion establishes a connection between the regression results and financial statements analysis, thereby providing a justifiable rationale for the obtained results. While Tables 4.9 and 4.14 above summarize the financial performance trend, table 4.17 shows the trend of two key risk indicators (NPL and gross loans to total deposits ratio). NPL ratio measures the credit risk, whereas the ratio of gross loans to total deposits measures the liquidity risk. To facilitate the analysis, Non-Performing Loans (NPL) and the ratio of gross loans to total deposits have been consolidated for each bank classification as well as for the overall banking sector. However, the discussion centers on the overall sector's performance in line with the study's research objectives.

In addition, the summary in Table 4.17 indicates the maximum gross loans to total deposits ratio that is considered healthy and a best practice in the banking industry. The maximum acceptable gross loans to total deposit ratio is 80%; thus, banks whose ratios are close to or exceed the above threshold are considered to be at a critical liquidity risk. Moreover, not only will these banks be at risk, but also depositors will be at high risk of losing their money should borrowers face severe calamities to the tune of bringing up the NPL ratio. Table 4.17 shows the trend of Banks' Risks (NPLs and Gross Loans to Total Deposits).

Table 4. 17: Trend of Banks' Risks (NPLs and Gross Loans to Total Deposits)

	2010	2011	2012	2013	2014	2015	Average (2010-2015)	2016	2017	2018	2019	2020	Average (2016-2020)	Average difference
							Figures in Percentage (%)							
NPLD	4.94	6.95	7.41	6.13	6.65	6.64	*6.45*	9.33	17.59	14.97	12.21	12.33	*13.29*	-6.84
NPLF	3.28	21.11	5	5	7.13	6.97	*8.08*	7.93	8.37	7.95	8.24	9.3	*8.36*	-0.28
NPL (P)	5.02	5.86	5.56	5.97	6.45	6.51	*5.89*	8.08	11	11.01	11.61	11.9	*10.72*	-4.83
NPL (S)	3.49	7.35	9.76	6.32	8.61	8.51	*7.34*	11.87	23.53	11.76	3.14	4.38	*10.94*	-3.6
NPL(L)	7.12	6.96	6.59	7.47	8.19	6.5	*7.14*	8.1	8.49	6.29	5.65	6.35	*6.98*	0.16
NPL(S)	3.97	5.01	5.95	5.48	6.43	6.96	*5.64*	8.76	14.2	13.02	12.24	12.55	*12.15*	-6.51
NPL(I)	7.9	8.18	7.8	7.51	7.8	6.97	*7.69*	9.11	11.5	10.55	10.66	10.49	*10.46*	-2.77
LDR(D)	53.66	60.41	65.51	64.91	70.32	74.52	*64.89*	80.98	77.25	76.07	78.46	81.56	*78.86*	-13.97
LDR(F)	60.17	58.9	62.67	64.04	63.09	64.86	*62.29*	70.22	68.23	68.14	71.47	71.24	*69.86*	-7.57
LDR(P)	73.16	72.88	72.81	72.52	72.31	73.77	*72.91*	73.63	73.96	74.94	73.96	73.46	*73.99*	-1.08
LDR(S)	46.48	52.12	57.1	63.73	66.52	71.15	*59.52*	70.59	75.85	77.55	78.1	81.56	*76.73*	-17.21
LDR(L)	55.99	58.84	62.34	62.27	65.36	68.19	*62.16*	76.03	71.52	70.91	71.56	73.87	*72.78*	-10.62
LDR(S)	60.16	62.88	71.06	73.38	72.48	80.8	*70.13*	77.8	79.15	78.26	87.99	88.08	*82.26*	-12.13
LDR(A)	**80**	**80**	**80**	**80**	**80**	**80**	*80*	**80**	**80**	**80**	**80**	**80**	*80*	0

Note: NPL = Non-Performing Loans, LDR =Gross Loans to Total Deposits, where =Domestic Banks, F =Foreign Banks, (P) =Private Banks, (S) = State-Owned Banks, L =Large Banks, S= Small Banks, Industry Average, A =Average regulatory threshold

4.7.2.2.1   Relationship Between Bank Risks and Financial Performance

This subsection discusses results in two-fold. The first part discusses regression results on bank performance, whereas the results of financial statements analysis are discussed in the second part. To substantiate the results, the discussion establishes a correlation between the regression outcomes and the analysis of financial statements. This linkage serves to provide a comprehensive justification for the findings (i) and (ii) below discuss the influence of NPLs and Gross Loans to Total Deposits on financial performance, respectively.

(i) Relationship between NPLs and Bank Financial Performance (ROA, ROE, and NIM)

This section directly connects with the analysis carried out and presented in the previous sections. Hence, for sound interpretation, regression results in Table 4.8 have been read in conjunction with the financial analysis in Table 4.9.   The table summarizes the trend of bank performance before and after TSA for the banking industry and for all bank classifications, paralleled with the movements of NPLs and gross loans to total deposits in Table 4.17. In light of the preceding, this section will expand the same analysis in detail by linking up the influence of NPLs on bank financial performance as detailed below.

Regression results in Table 4.8 indicate that for the case of non-performing loans, the general effect on ROA was negative and statistically significant (–0,031 p<0.1) before TSA. The same remained negative but statistically insignificant (–0.028) after TSA, the coefficient of which was at a small magnitude compared to the period before TSA.

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This implies that as NPLs increases, ROA falls. Table 4.9 above shows that the overall average industry ROA declined from 2.47% to 1.62% after TSA adoption, while at the same time, the industry NPLs ratio rose from 7.69% to 10.46%. In conjunction with the regression results above that show a negative coefficient on NPLs, there is reasonable evidence that NPLs and bank performance have a negative association. The results are supported by the Central Bank of Tanzania's public notes on measures to address NPLs syndrome that, as NPLs increases, lending rates follow suit, and the impact may eventually bring about instability in the banking sector. Fraudulent activities by bank employees and improper loan-issuing procedures were cited as some of the primary reasons for high NPLs (BOT, 2021).

The above results partially reject the null hypothesis, which states that the influence of bank characteristics (NPLs) has no significant impact on bank performance before and after TSA. The results show a significant negative effect of bank characteristics (NPLs) on bank performance before TSA adoption and an insignificant negative impact after TSA adoption. For the period before TSA, regression results show concrete evidence that as NPLs rises by 1%, ROA falls by 0.031%. On the other hand, the result concurs with the null hypothesis that the influence of bank characteristics (NPLs) has no significant impact on bank performance before and after TSA. This has been observed after TSA adoption when the regression results reported statistically insignificant results. In the same vein, results for ROE were not statistically insignificant in both periods meaning that whether with TSA or not, ROE would have declined based on factors other than TSA. However, though regression results were not statistically significant for ROA after TSA and for ROE in both periods, the

financial analysis results show that the industry NPLs ratio rose from 7.69% before TSA to 10.46% after TSA.

Consequently, since the industry ROA and ROE were negatively affected after TSA adoption, we can confirm that NPLs has an indirect negative relationship with bank performance using ROA and ROE as performance indicators. Table 4.9 shows that ROA declined from 2.47% to 1.62% after TSA, paralleled by a decline of ROE from 13.06% before TSA to 6.31% after TSA. Given the above, though regression results are statistically insignificant, there is reasonable evidence that NPLs has an indirect negative relationship with ROA and ROE. It should also be appreciated that, apart from NPLs, which was not statistically significant, the overall analysis shows that, after TSA adoption, several macroeconomic variables changed to some extent, causing the entire banking sector to be shaken. GDP growth rate declined, and the exchange rate depreciated by 38% from TZS 1627/US$ before TSA to TZS2250/US$ after TSA.

The above might have influenced the growth of the NPLs ratio from 7.69% to 10.46% after TSA. In light of the above, the financial statement analysis revealed that using NPLs as a risk indicator, we can conclude that the increase in NPLs reduces banks' profitability to a larger extent regardless of its statistically insignificant relationship as per the regression results. The results are consistent with several scholars and risk management frameworks, circulars, and public notices issued by regulators from time to time. A review of the central bank's risk management guidelines states that credit risk is one of the critical risks facing banking institutions. It refers to the possibility of a situation where the obligor or borrower is either grudging to accomplish

responsibility or its capability to execute such a commitment is severely compromised, such as causing potential financial harm to the lending institution (BOT-RMGS 2010). In connection with the study by Aljughaiman and Salama (2019), they found that when the overall risk indicator is split into separate components, the credit risk is assessed to bear a significant portion. Based on the above literature, the 2021 Tanzania central bank's public notice on measures to curb NPLs confirms the prior studies, as the notice explicitly pointed out that high NPLs cause a general increase in lending rates and may eventually destabilize the sector's performance (BOT, 2021). The decline of ROA and ROE after TSA, paralleled by an increase in NPLs from 7.69% to 10.46%, confirms the BOT's concerns about the risk that NPLs may bring to the banking sector.

Results for NIM were not statistically significant, though the coefficients were positive and statistically insignificant in both periods (before and after TSA adoption). The results show that the magnitude of the coefficient remained almost constant, implying that as NPLs rises, NIM is less affected. This has been evidenced by the Bank of Tanzania Financial Sector Supervision Annual Reports of 2015 through 2020, where the trends for five years on banks' performance were presented. The industry ratios have confirmed the same in Table 4.9 above. The table shows that an average NIM before TSA was 7.01% and 7% afterward, whereas NPLs rose from 7.69% to 10.46%. The results support the above regression results and concur with the null hypothesis that the influence of bank characteristics (NPLs) has no significant impact on bank performance before and after TSA adoption. In light of the above, we can conclude that there is no association between NPLs, TSA, and NIM.

In the same vein, the above regression results are consistent with the study conducted by Aljughaiman and Salama (2019), Pillai et al. (2017), and Victoria et al. (2018). The studies integrated the agency and the institutional theory to explain bank performance in the MENA countries. The findings of the studies caution that, depending on the measurement criteria used for the analysis, it is imperative to identify whether it is the firms' specific governance structure or the ownership structure or characteristics that were used as independent variables to gauge its impact on firms' performance. The above results on NIM as a performance indicator are inconclusive in light of the preceding. The researchers also assert that countries have different economic and non-economic factors, which may result in additional findings on how social institutional, and governance structures may affect firms' performance. Moreover, regulatory performance measurement criteria may also bring about conflicting results as MENA countries have distinctive social-religious features that may cause inconsistent findings if the independent variables are changed. In conclusion, the current study aligns with the perspective that the explanatory influence of social factors and corporate governance on institutional performance is contingent upon the specific variables employed as performance indicators.

(ii) Relationship between Gross Loans to Total Deposits and Bank Financial Performance

The gross loans to total deposits ratio is a second risk indicator examined in this study. When performance is measured in terms of ROE, the effect of gross loans to total deposits ratio before TSA was positive and significant (0.052, $p<0.1$) and became negative but statistically insignificant (–0.092) after TSA. The above suggests that

before the implementation of the Treasury Single Account (TSA), a 1% increase in the gross loan-to-deposit ratio had a positive effect on Return on Equity (ROE). In contrast, the effect was the opposite after TSA, such that an increase in the gross loans to total deposits ratio negatively impacted ROE. Though the results were not statistically significant after TSA, such a deterioration can be explained by a sharp rise in the NPLs ratio and other non-interest expenses that had impaired banks' profitability. The industry NPLs ratio rose from a single to double digits during the TSA period, bringing down the overall banking sector's profitability. As the gross loans to total deposits ratio increases, the chances for high NPLs also increase. Table 4.17 shows that as the gross loans to total deposits ratio increased from 66.15% before TSA to 77.52% after TSA, the NPLs ratio rose from 7.69% to 10.46% after TSA. There is a direct positive association between gross loans to total deposits and NPLs.

As banks increase lending activities, chances for recruiting non-credit-worthy customers become high; thus, NPL's risk increases as well. As elaborated in the public notice issued by BOT in 2021, there were fraudulent activities committed by bank staff in issuing loans to non-credit-worthy customers, such as bringing up the NPLs ratio. Consequently, as NPLs increased, the banks' bottom line was significantly affected, causing profitability ratios (ROA and ROE) to deteriorate, as summarized in Table 4.9 above. Moreover, the study revealed that, after TSA adoption, lending activities to the private sector slowed down, prompting BOT to intervene by issuing a circular on how to boost lending to the private sector while controlling NPLs (BOT, 2018). In light of the preceding, commercial banks' desperate measures to increase lending activities turned out negatively as the movement came with a rise in NPLs. In the same vein, the

banks' liquidity was low due to the withdrawal of government deposits from the commercial bank system; several bank failures were witnessed.

Meanwhile, other giant banks retrenched a portion of their employees while other banks went far by closing down some of their bank branches. These are other primary reasons for low profitability in the banking industry after TSA adoption. Moreover, banks were forced to mobilize deposits from the general public during the TSA period as the free government deposit was withdrawn from the commercial banks' system. In turn, funding costs went high, such as pulling down profitability. In light of the above reasons, the overall industry average ROA and ROE declined. Table 4.9 shows that the industry ROA chopped from 2.47% before TSA to 1.62% after TSA, paralleled by a decline of ROE from 13.06% before TSA to 6.31% after TSA. Regression results for ROE partially reject the null hypothesis as the result shows a significant influence of bank characteristics (gross loans to total deposits) on bank performance before TSA.

Contrariwise, the analysis accepts the null hypothesis after TSA adoption because the results were not statistically significant, though the coefficient turned negative. In the same vein, results for ROE were not statistically significant before and after TSA, such as confirming the null hypothesis that the influence of bank characteristics (gross loans to total deposit) has no significant impact on bank performance before and after TSA adoption. However, suppose reference is drawn from the financial analysis results in Table 4.9. In that case, as highlighted above, we find that a decline of both ROA and ROE paralleled an increase in gross loans to total deposits and NPLs ratios. In light of the above, though the regression results are statistically insignificant, the financial

analysis results show that the gross loans to total deposits ratio is indirectly associated with profitability ratios. These results are consistent with the study by various scholars that we cannot come up with conclusive results on the relationship between bank performance and certain independent variables. The results may differ in several ways. Wanke et al. (2019) used Dynamic Network Data Envelopment Analysis (DEA) to study banking efficiency in the MENA region. The findings revealed that the efficiency level regarding earnings, financial position, and financial soundness indicators depend on various characteristics such as the type of banking institutions, the bank origin, and the bank ownership structure. However, some barriers such as cultural differences and regulatory factors may drive the result in a contrary direction.

The effect on NIM was positive and statistically significant (0.078 p<0.01) before TSA. In contrast, after TSA, the impact was still positive but statistically insignificant (0.042), the coefficient of which was at a small magnitude compared to the pre-TSA period. It is imperative to note that while NIM was positive in both periods, the results show that the magnitude of the coefficient remained almost constant, implying that as the gross loans to total deposits ratio rises, NIM is less affected. This has been evidenced by the Bank of Tanzania Financial Sector Supervision Annual Reports of 2015 through 2020, where the trends for five years of banks' performance were presented. The industry ratios are confirmed in Table 4.9 above, which shows an average NIM before TSA at 7.01% and 7% after TSA. Similarly, gross loans to total deposits rose from 66.15% before TSA to 77.52% after TSA. NPLs rose from 7.69% to 10.46%. The results support the above regression results; hence, we can conclude that there is a positive association between gross loans to deposits and NIM such that

as the gross loans to total deposits ratio goes up, NIM increases as well. As elaborated above, NIM depends much on the net effect of interest earned from gross loans and interest incurred on customers' deposits. As such, if both interest income and interest expense increase, the impact is almost negligible. After the TSA adoption period, banks started lending aggressively to boost private sector lending; meanwhile, funding sources were expensive after the government withdrew its deposits from commercial banks. For that reason, the increase in interest income was somewhat eroded by interest expenses, such as making the NIM ratio remain almost constant before and after TSA.

The results partially reject the null hypothesis that bank characteristics have no significant impact on bank performance before and after TSA. Regression analysis shows that the results were statistically significant before TSA, thus calling for the rejection of the null hypothesis. Contrariwise, the results were not statistically significant after TSA, thus concurring with the null hypothesis. It should be appreciated that several past studies came up with similar results. We can therefore argue that there are non-conclusive results for the relationship between independent and dependent variables. The results may differ in several ways.

The study by Aljughaiman and Salama (2019), Pillai et al. (2017), and Victoria et al. (2018) integrated the agency and the institutional theory to explain bank performance in the MENA countries. The findings of the studies caution that, depending on the measurement criteria employed, it is imperative to identify whether the study focuses on the firm's specific governance structure, ownership structure, or other characteristics as independent variables to gauge their impact on firms' performance.

Similar findings were found by Wanke et al. (2019). They concluded that earnings, financial position, and financial soundness indicators depend upon various characteristics, such as the type of banking institutions, the origin, and bank ownership structure. However, some barriers such as cultural differences and regulatory factors may drive the result in a contrary direction.

4.7.2.2.2   Relationship Between Bank Risks and Regulatory Performance

This sub-section discusses the influence of two risk indicators on bank performance. NPLs and Gross Loans to Total Deposit ratios were used as proxies for bank risks. In terms of the Gross loans to deposit ratio, the results were positive and statistically significant (0.715, $p<0.01$) before TSA and turned negative and statistically significant (- 0.408, $p<0.05$) after TSA. The effect of NPLs was consistent with the gross loans to deposit ratio such that before TSA, the results were positive and statistically significant (2.667, $p<0.01$) before the coefficient turned negative and statistically insignificant (-0.545) after TSA. In light of the above, the post-TSA results imply that as the Gross loans to deposits and NPLs ratios increase by 1%, CAMELS rating falls by the regression coefficients above. It should be appreciated that, as the rating falls from a large to a small number, it implies an improvement in bank performance. It is noteworthy that after TSA adoption, the CAMELS rating generally deteriorated as lending activities were down due to commercial banks' reluctance to lend to the private sector. The private sector was in a shamble until the central bank issued a circular on measures to boost lending to the private sector while curbing down NPLs. Eventually, banks regained the confidence to lend to the private sector, thus improving the sector's performance at a small pace.

The above results partially reject the null hypothesis that bank characteristics have no significant impact on bank performance before and after TSA adoption. The regression analysis has recorded diverse results, as observed above. At one point, the results were statistically significant and statistically insignificant on another side, thus making it challenging to come up with a generalized conclusion. However, based on the results of financial analysis in Tables 4.11 and 4.16, the study found that, regardless of statistical significance, TSA has directly or indirectly affected bank performance, as evidenced by a general deterioration of CAMELS ratings.

It should also be appreciated that, during the post-TSA period, the central bank had increased the threshold for the minimum bank capital base from five billion Tanzanian shilling to fifteen billion. As a result, though there was a deterioration of the banking sector profitability ratios (ROA and ROE), the new banking capital base was able to absorb the shock. It is noteworthy that the bank capital is used as a shock absorber during a period of severe calamities that may cause a financial crisis. However, the impact of COVID_19 decelerated the performance improvement level. During this period, many businesses collapsed while others temporarily shut down operations, causing unemployment and eventually bringing down people's purchasing power and ability to repay their loans. A review of the 2020 central bank's financial sector supervision report revealed that the overall banking sector performance shed light and started improving. Banks' liquidity, profitability, and capital adequacy ratios were sound and reasonably stable.

Capital adequacy ratios (core capital to risk-weighted assets and total capital to risk-weighted assets) had improved and were reasonably far above the statutory ratios. The report revealed that the improvement in capital adequacy was two-fold: the injection of additional capital by banking institutions to meet the minimum statutory requirements. The second factor was the act of banks retaining their profits to grow their capital base. The sector's core capital to risk-weighted asset and off-balance exposure increased from 7.04% in 2019 to 17.19% in 2020. In contrast, total capital to total risk-weighted assets and off-balance exposure rose from 18.06% to 18.08%.

Moreover, by 2020, asset quality started improving as the NPLs ratio declined at a low magnitude. The reason for asset quality improvements was mainly due to numerous efforts by banking institutions for loan recovery. For that reason, the sector's NPLs decreased from 9.58% in 2019 to 9.42% in 2020 (BOT, 2020). It is against these reasons that, although the overall average CAMELS after the TSA period had deteriorated, the same started showing some green lights from 2019 to 2020.

In contrast, the results show that before TSA, there was a positive effect such that as Gross loans to deposit and NPLs ratios went up, the CAMELS rating increased as well, implying a deterioration of bank performance. It should be appreciated during the pre-TSA period; banks were doing business as usual as they leveraged on government deposits. In the same vein, as the sector was still liquid, banks had a relaxed mindset, and they could not foresee what could happen in the future due to government policy changes. State-owned banks were prone to political risk as the government and some political leaders borrowed from these banks without repaying the loans. Therefore, the

present study argues that a similar study should be conducted to assess the long-term impact of TSA on the CAMELS rating after the long-term implementation of the TSA system.

4.7.2.2.3 Relationship Between Bank Risks and Management Performance

As highlighted in the previous sections, bank risks are discussed in two variables. NPLs stands as a proxy for credit risk, and the gross loans to total deposits ratio is a proxy for liquidity risk. Regression results for the overall banking sector show that before TSA adoption, the gross loans to deposit ratio had recorded a positive and statistically significant coefficient (4.733, $p<0.05$) before the coefficient turned negative and statistically significant (-5.162, $p<0.1$) after TSA. The above coefficient shows that, as the gross loans to total deposit ratio increased by 1%, the cost-to-income ratio declined by 5.16%, implying an improvement in management performance. This is because as gross loans increase, interest income (as part of the numerator in the ratio) increases, causing the cost-to-income ratio to go down. Contrariwise the effect was positive before TSA such that as the gross loans-to-deposits ratio went up, the cost-to-income ratio increased as well, implying that management performance had deteriorated by 4.73 per cent before the TSA adoption period. The impact of NPLs on the overall banking sector's cost-to-income ratio was not statistically significant; thus, financial statements analysis was used to amplify the above regression results. Moreover, subsection 4.8 highlights the influence of interaction between risk and performance, using ownership concentration and bank size as interaction variables. However, since this section does not form part of the study's research objectives, a detailed discussion of the results is appended as annexure one just immediately after

the list of references. It should be appreciated that the introduction of the above-mentioned interaction variables was meant to test the robustness of the model,

4.7.3 General Overview of the Influence of Industry-Specific and Country-wide variables on Bank Performance

The study used interest rate, GDP growth rate, inflation rate and exchange rate as the key indicators. Statistical data were collected from the Bank of Tanzania, National Bureau of Statistics, IMF and World Bank publications to show the trend of the variables above for the period under review.

A literature review reveals that bank-specific factors are the internal factors affecting bank performance. These factors include but are not limited to liquidity position, size of the bank, capital, operational efficiency, and solvency risk. On the other hand, macroeconomic factors (industry and country-wide variables) are regarded as external factors affecting bank performance. These factors include GDP, inflation, and the country's effective exchange rate (Combey and Togbenou 2017). As long as industry-specific and country-wide variables are external factors to the bank, this section discussed the influence of these external variables on the entire bank sector's performance. As such, the discussion has not been extended to discuss the impact of these general external variables on specific bank classification; relatively, the same was based on the overall banking sector performance. As these external variables are general and non-controllable by specific banking institutions, the present study has focused on the general impact rather than bank-specific classification. However, whenever necessary, the discussion linked part of the results with a bank-specific

category whenever a close association was identified. It should be appreciated that several theories and studies have proven the existence of an association between macroeconomic variables (industry-specific, country-wide variables), solvency risk and bank performance.

Nevertheless, there is a mixture of results by different scholars, such as making the study inconclusive. Some studies show that depending on the sample specification and data set; findings can bring different results (Combey and Togbenou, 2017). In light of the above, the present study has also come to the same conclusion that regression analysis revealed a mixture of results by different scholars, such as making the current study inconclusive. Table 4.18 shows the interest rate trend, GDP growth rate, inflation, and exchange rate.

Table 4.18:   Trend of Interest Rate, GDP Growth Rate, Inflation Rate and Exchange Rate

Year	2010	2011	2012	2013	2014	2015	Average (2010-2015)	2016	2017	2018	2019	2020	Average (2016-2020)	Average difference
All figures are in Percentage Form (%) Except the Exchange Rate														
EXCHANGE RATE	1396	1557	1572	1599	1653	1985	*1627*	2177	2229	22.64	2288	2294	*2250*	*-623*
GDP GROWTH	20.68	20.4	13.67	17.12	13.19	14.22	*16.55*	14.85	9.58	8.67	8.41	8.06	*9.91*	*6.64*
INFLATION RATE	7.23	12.67	16.13	7.91	6.14	5.58	*9.28*	5.18	5.32	3.51	3.4	3.29	*4.14*	*5.14*
INTEREST RATE	14.55	14.96	15.56	15.84	16.29	16.1	*15.55*	15.96	17.77	17.43	16.97	16.66	*16.96*	*-1.41*

Note: Interest Rate represents an industry-specific factor, while the rest represent country-wide variables

Table 4.18 above shows that TZS had depreciated by 38% relative to US$ as the average exchange rate before TSA adoption was TZS 1627/US$ before hitting an average rate of TZS 2250/US$ after TSA. Impliedly, banks were prone to exchange rate risk at large. GDP growth rate deteriorated by almost 40% as the same grew at an average rate of 16.55% before TSA, hitting 9.91% after TSA. This indicates a general slowdown of economic activities, which prompts staving in both the private and public sectors. The inflation rate declined after TSA's adoption as the rate declined from 9.28% before TSA to 4.14% after TSA. Surprisingly, the interest rate rose from 15.55% to 16.96%, representing a 9% increase in interest rate. As the inflation rate fell, the interest rate was expected to follow suit; however, the result was contrariwise. The main reason for the increase in interest was the rise in NPLs, as cited from the central bank's public notice on measures to address the NPLs syndrome (BOT, 2018). Figure 4.8 shows the trend of Industry Specific, Country-Wide Variables and Banks' Profitability for the sector.

Figure 4. 8:   **Trend of Industry Specific, Country-Wide Variables and Banks'
Profitability**

ROAI = Return on Asset for the
Banking Industry

ROEI = Return on Equity for the Banking
Industry
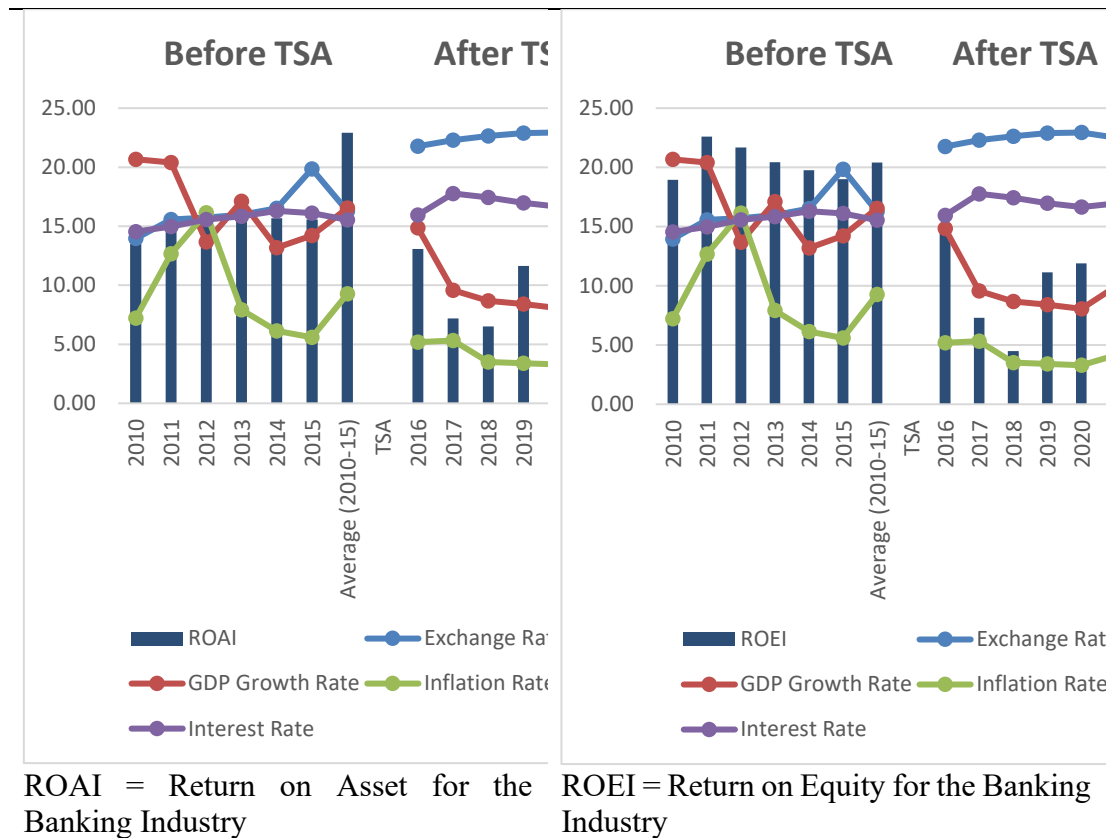
Figure 4.8 above shows the interest rate, inflation rate exchange rate and GDP growth

rate concerning ROA and ROE. Table 4.18 reveals a depreciation of TZS against US$

by 38%. The above was paralleled by a decline in the GDP growth rate from 16.55%

to 9.91% and a fall in inflation rates from 9.28% to 4.14%. Contrariwise, the interest

rate increased from 15.55% to 16.96% due to an increase in NPLs, causing banks to

increase their interest rate to compensate for a risk associated with NPLs. The trend

shows that after TSA adoption, both ROA and ROE for the industry declined

consistently with the average industrial ratio. The industry ratio declined by 34%, from

2.47% to 1.62%, for the case of ROE. The industry ratio recorded a decline of ROE

by 54%, from 13.06% to 6.31%. Based on the trends above, there is clear evidence

that TSA has negatively affected bank performance, as evidenced by a general decline

in ROA and ROE. In the same vein, the above analysis shows a deterioration of almost

all the above macroeconomic variables except for the inflation rate, which recorded a

decline. The rest of the variables, such as exchange rate, GDP growth rate and Interest,

had deteriorated. TSA adoption can be explained as one of the main drivers of the

deterioration mentioned above. It should be appreciated that though TSA adoption is

healthy for the country's economic stability, the same negatively impacted bank

performance, especially in the first five years of its implementation. However, it is

fertile for a similar study to be carried out to check TSA's long-run impact on bank

performance, paralleled with GDP growth rate, exchange rate stability, interest rate

stability etc. In the same vein, the overall banking sector's NIM was almost stagnant

as the same had slightly declined from 7.71% to 6.92%, say 7%, implying that TSA

came up with a negative impact on bank performance, especially in the first five years

of its operations. Figure 4.9 shows the trend of industry-specific and country-wide

variables and net interest margin for the overall banking sector

**Figure 4. 9:   Trend of Net Interest Margin, Industry Specific and Country-Wide
Variables**
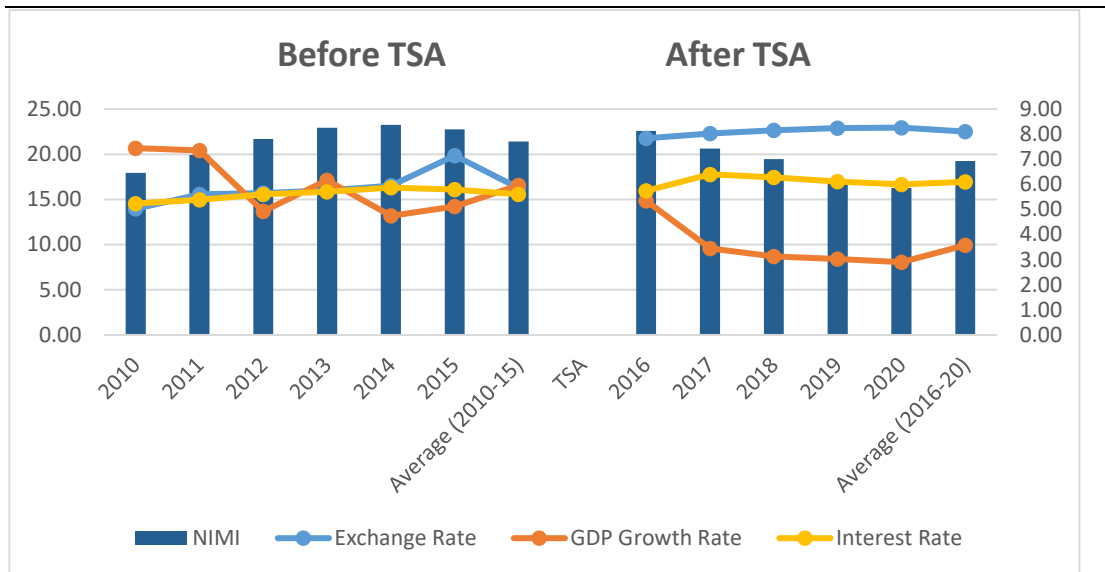
As highlighted in the previous paragraphs, figure 4.9 shows that the overall average
banking sector's NIM was almost stagnant as the same had slightly declined from
7.71% to 6.92%, say 7%. The above implies that TSA negatively impacted bank
performance, especially in the first five years of its operations. However, the decline
of NIM was not material. As highlighted above, there is a need for a similar study to
be carried out to check the long-run impact of TSA on bank performance. Figure 4.9
above shows the trend of industry-specific and country-wide variables and net interest
margin for the overall banking sector.

A detailed discussion on the influence of industry-specific, and country-wide variables
on bank performance follows in subsequent paragraphs. The discussion centers on
financial performance in subsection 4.7.3.1 and regulatory and management

performance in sections 4.7.3.2 and 4.7.3.3 respectively in line with the study's objectives.

4.7.3.1 Relationship between Industry-Specific and Country-wide Variables and Banks' Financial Performance

This section discusses the influence of interest rate, inflation rate, GDP growth rate and exchange rate on the financial performance of the banking sector. The interest rate was used as a proxy for industry-specific, whereas inflation rate, exchange rate and GDP growth rate were used as country-wide variables.

4.7.3.1.1 Relationship between Interest Rate and Bank Performance

This subsection discusses the influence of interest on bank financial, regulatory and management performance. The discussion is detailed in roman (i) to (iii) below.

(i) Relationship between Interest Rate and Banks' Financial Performance (ROA, ROE and NIM)

Generally, interest rates' impact on banks' performance before and after TSA, recorded consistent results on ROA, ROE and NIM. For example, the impact of interest rate on ROA before TSA was positive and significant (0.267, $p<0.01$) but negative and significant (–0.323, $p<0.01$) after TSA. In the same vein, similar results were recorded for ROE and NIM, such that the effect of interest rate on ROE before TSA was positive and significant (2.396, $p<0.01$) but negative and significant (–2.563, $p<0.01$) after TSA. In terms of NIM, the effect was consistent with ROA and ROE. The same was positive and significant (0.502, $p<0.01$) before TSA but negative and statistically insignificant after TSA. ROA and ROE were negative after TSA for several reasons.

After TSA adoption, the sector was characterized by rising NPLs and bad and doubtful debts that eroded profitability regardless of the increased interest income.

In conjunction with the preceding, the growth of gross loans was consistent with an increase in NPLs, implying that banks were lending desperately, thus earning temporary interest income before the loans turned bad. At the same time, money circulation was not significant in the economy due to the withdrawal of government deposits from commercial banks. In the same vein, TSA came with cutting down unnecessary government expenditure. During this time, the government was incurring more capital expenditure than recurring expenditure, such as reducing money circulation in the economy. For the case of NIM, the result shows that though interest income was increasing, the net interest income was rising at a decreasing rate and eventually declined from 7.71% to 6.92% after TSA. The decline is attributed to the industry's overall increase in interest expenses and NPLs. Banks were forced to mobilize deposits from the general public other than free-riding on government deposits during the TSA period. As a result, the sector's net interest margin slightly declined due to, among other reasons, rising funding costs. Figure 4.8 shows the trend of the net interest income growth rate. Previous scholars came up with different results in studies assessing the influence of interest on the banking sector's profitability. Banks' lending interest rates have been used widely.

The above results partially reject the null hypothesis that the influence of industry-specific and country-wide variables has no significant impact on bank performance before and after TSA adoption. Regression results have recorded mixed results such

that at one point, the results were statistically significant and, at another point, statistically insignificant, thus making it challenging to come up with a generalized conclusion. However, based on the financial analysis results in tables 4.9 and 4.10 the study found that, regardless of statistical significance, TSA has directly or indirectly affected bank performance, as evidenced by a general decline in the sector's performance.

Moreover, the above regression analysis is positive and negative in different periods (before and after TSA adoption) and corresponds to the previous studies, which yielded mixed results. While the study by While Yahya, et al. (2017) indicated a positive correlation between interest rates and performance, Jabeen and Rashid (2016) found an inverse association between the abovementioned variables. Moreover, the study by Al-Homaidi, et al. (2018) on the influence of specific factors and macro-economic factors affecting Indian commercial banks' profitability found that all the macroeconomic factors, namely (i) exchange rate, (iii) inflation rate, (ii) interest rate as well as (iv) GDP have recorded a significant negative association with commercial banks operating in India. Given the above, the present study has also found inconclusive results due to both negative and positive associations of the study variables.

Figure 4. 10: Trend of Net Interest Income Growth Rate for the Overall Banking Sector
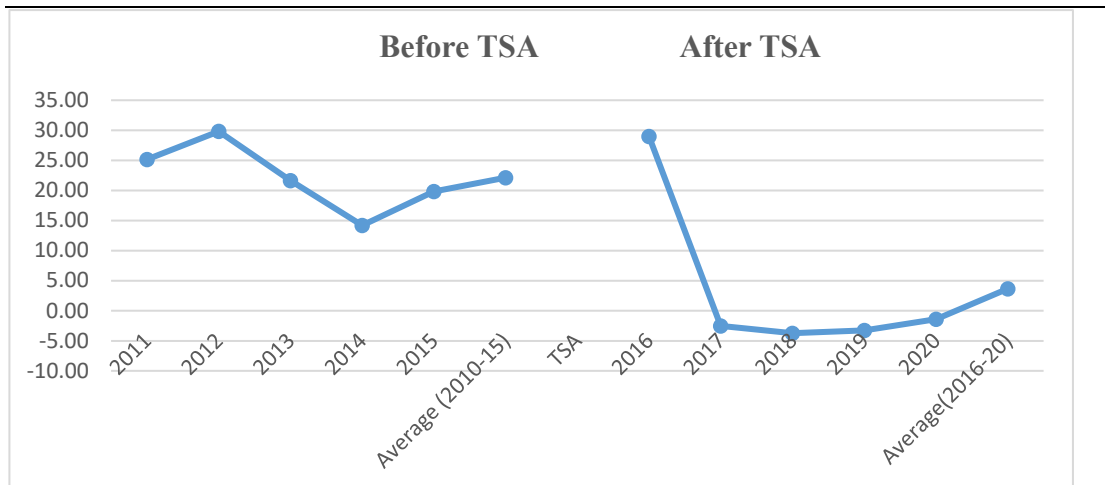
Figure 4.10 above shows the overall trend of the net interest income growth rate. Though the average lending interest rate had slightly risen after TSA, the net interest income growth rate had deteriorated and went negative for some years after the TSA adoption period. As shown above, the average growth rate declined from 22.13% to 3.62%. This indicates that the growth of gross loans was not consistent with the growth of net interest income. The rise in funding costs, and suspension of interest income due to NPLs, are among the significant reasons for silencing the net interest income growth rate to such an extent.

As summarized in table 4.18 average lending rate increased from 15.55% to 16.96%, which amounted to a 9% change in interest rate after TSA. Surprisingly, the increase in interest rate has not yielded positive results as the net interest income earned was severely affected by NPLs and non-interest expenses pulling down the overall bank sector's profitability, as highlighted above. Though the inflation rate declined from 9.28% to 4.14%, the decline was not proportional to the interest rate movement. Banks

were forced to raise interest rates to cover NPLs risk, as reported in the 2018 central bank circular. Moreover, during the same period, lending to the private sector was very low, prompting the Central Bank of Tanzania to intervene by issuing a circular on how to boost lending activities to the private sector while controlling NPLs (BOT, 2018). It should be appreciated that under normal circumstances, a high-interest rate discourages lending activities; as a result, commercial banks were forced to use aggressive marketing strategies to boost lending activities, which could not yield positive outcomes. During this period, domestic banks' NPLs rose from 6.45% to 13.29%, whereas foreign banks' ratio increased from 8.08% to 8.36%. In light of the above, there is reasonable evidence to conclude that after TSA adoption, there was a presence of a negative association between interest rate and profitability (ROA and ROE).

Moreover, non-interest expenses increased in the course of managing loan portfolios and costs of recovering NPLs. Moreover, the above regression results are positive and negative in different periods (before and after TSA adoption) and correspond to the previous studies, which came up with diverse results. The study by study by Jabeen and Rashid (2016) found an inverse association between the interest rate and profitability. Moreover, the study by Al-Homaidi, et al. (2018) on the influence of specific factors and macro-economic factors affecting Indian commercial banks' profitability found that all the macroeconomic factors, namely (i) exchange rate, (iii) inflation rate, (ii) interest rate and (iv) GDP have recorded a significant negative association with the profitability of commercial banks operating in India. In light of the above, the present study has also found results after TSA adoption, though the

position was positive before TSA adoption. The positive association before TSA is consistent with the study by Yahya, Akhtar, and Tabash (2017) revealed a positive association between interest rate and bank performance. In light of the preceding, the present study found reasonable evidence to conclude that the relationship between interest and performance is inconclusive due to the presence of both negative and positive associations of the study variables.

(ii) Relationship between Interest Rate and Banks' Regulatory Performance (CAMELS)

Regarding interest rate, the results were negative and statistically significant (- 10.492, p<0.01) before TSA. In contrast, the same was positive and statistically significant (10.306, p<0.01) after TSA. The negative association before TSA implies that a 1% increase in interest rate decreased the CAMELS rating, thus improving the performance. However, after TSA adoption, the coefficient is positive, implying that a 1% increase in interest rate increased CAMELS rating, thus deteriorating bank performance. As highlighted in previous sections, the CAMELS rating is read in ascending order such that the lower the rating, the better the performance and vice versa. Table 4.18 clearly shows a deterioration of CAMELS rating after TSA adoption. The reason for such a deterioration can be explained in several reasons. After TSA adoption, the sector was characterized by rising NPLs and bad and doubtful debts that eroded profitability regardless of the increased interest income. In conjunction with the preceding, the growth of gross loans was consistent with an increase in bad debts written off, implying that banks were lending desperately, leading to earning a temporary interest income before the loans turned bad. At the same time, money

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circulation was not significant in the economy due to the withdrawal of government deposits from commercial banks. In the same vein, TSA came with cutting down unnecessary government expenditure. During this time, the government was incurring more capital expenditure than recurring expenditure, such as reducing money circulation in the economy.

Consequently, the sector's net interest income was rising at a decreasing rate and eventually declined from 7.71% to 6.92% after TSA adoption. The decline is attributed to the industry's overall increase in interest expenses and NPLs. It should be appreciated that during the post-TSA period, banks were forced to mobilize deposits from the general public other than free-riding on government deposits. As a result, the sector's net interest margin slightly declined due to, among other reasons, rising funding costs.

The above positive and negative regression analysis in different periods (before and after TSA adoption) corresponds to the previous studies, which yielded diverse results. While the study by While et al. (2017) revealed a positive association between interest rate and bank performance, Jabeen and Rashid (2016) found an inverse association between the variables above. Moreover, the study by Al-Homaidi, et al. (2018) on the influence of specific factors and macro-economic factors affecting Indian commercial banks' profitability found that all the macroeconomic factors, namely (i) exchange rate, (iii) inflation rate, (ii) interest rate as well as (iv) GDP have recorded a significant negative association with commercial banks operating in India. In light of the above,

the present study has also found inconclusive results due to the study variables' negative and positive associations.

(i) Relationship between Interest Rate and Banks' Management Performance (CIR)

Regression results recorded an insignificant relationship between interest rate and cost-to-income ratio. However, the sector has experienced an increased cost-to-income ratio paralleled by an increase in interest rates. There's a shred of indirect evidence that TSA came up with an increased cost structure, such as causing banking institutions to increase their interest rate in a course of covering funding costs and increased operational costs.

4.7.3.1.2 Relationship between Inflation Rate and Bank Performance

This subsection discusses the influence of inflation on bank financial, regulatory and management performance. The discussion is detailed in roman (i) to (iii) below.

(i) Relationship between Inflation Rate and Banks' Financial Performance (ROA, ROE and NIM)

For the inflation rate, the effect on bank performance changed from being negative and significant before TSA (-0.073, $p<0.01$) into positive and significant (0.415, $p<0.01$) after TSA when the indicator of bank performance is Net Interest Margin (NIM). This implies that a 1% inflation rate increased the net interest margin by 0.073% before TSA. It should be appreciated that the inflation rate increases the cost of living, thus impairing people's purchasing power. During the pre-TSA period, lending activities

were running normally only that the rate of gross loans to deposits ratio was lower than the position after TSA adoption. Impliedly the rate of NIM was not at its desired levels.

In contrast, after TSA, the results were positive and significant (0.415, $p<0.01$) such that as the inflation rate increased, NIM increased and vice versa. It is generally expected that as the inflation rate declines, the interest rate should also adjust downward. However, during the post-TSA adoption period, the inflation rate fell from 9.28% before TSA to 4.14% after TSA. Nevertheless, instead of adjusting the interest rate downwards, the same had slightly increased from 15.55% to 16.96%. The main reason is the increase in NPLs, as highlighted in the Central Bank of Tanzania circular on measures to control NPLs (BOT, 2018). That is why after TSA, the coefficient for NIM turned positive, meaning that as the inflation rate decreases, NIM decreases as well. Results for ROA and ROE were not statistically significant such as failing to draw strong evidence of the relationship between inflation rate and bank performance.

The above results partially reject the null hypothesis that the influence of industry-specific and country-wide variables has no significant impact on bank performance before and after TSA adoption. Regression results have recorded mixed results such that at one point, the results were statistically significant and, at another point, statistically insignificant, thus making it challenging to come up with a generalized conclusion. However, based on the results of financial analysis in Tables 4.9 and 4.10, the study found that, regardless of statistical significance, TSA has directly or indirectly affected bank performance, as evidenced by a general decline in bank performance.

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Moreover, the above regression results are positive and negative in different periods (before and after TSA adoption) and correspond to the previous studies, which came up with diverse results. The study by Al-Homaidi, et al. (2018) on the influence of specific factors and macro-economic factors affecting Indian commercial banks' profitability found that all the macroeconomic factors, namely (i) exchange rate, (iii) inflation rate, (ii) interest rate as well as (iv) GDP have recorded a significant negative association with commercial banks operating in India. Moreover, it should be appreciated that the assessment of inflation's influence on bank performance has been incepted in theory for the first time by Revell (1979). According to his judgment, the bank's profitability is highly affected by inflation, primarily through running costs such as operational costs and salary. Nevertheless, the present study is inconsistent with the above theory.

Moreover, the study by Trujillo-Ponce (2013) found that, as the inflation rate rises, the chances for a bank's profitability to decline are high as inflation can lead to an increase in salary and operational costs. However, banks can adjust interest rates accordingly to accommodate the rise in the inflation rate. Banks can improve revenue ahead of running costs, eventually boosting profitability. (Trujillo-Ponce, 2013). The present study revealed that during the post-TSA adoption period, the inflation rate declined from 9.28% recorded before TSA to 4.14% after TSA.

Consequently, commercial banks, instead of lowering interest rates, acted the other way round by increasing lending rates due to the increase of NPLs during the period. However, banks' profitability declined regardless of the above measures. The decline

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in profitability is, therefore, an accurate picture of the negative impact of TSA adoption on bank performance. As such, the present study has also found inconclusive results due to both negative and positive associations of the study variables before and after TSA adoption.

(ii) Inflation Rate and Banks' Regulatory Performance (CAMELS)

Regression results on the influence of inflation rate on CAMELS ratings were not statistically significant; however, as highlighted in previous sections, the economy was characterized by a general deterioration of macroeconomic variables and bank performance as a whole. CAMELS ratings have deteriorated after TSA adoption hence justifying the presence of an indirect relationship brought by TSA on bank performance. It is generally expected that, as the inflation rate falls, then the interest rate might also follow suit; however, the results were contrariwise as interest increased though the inflation rate declined. The main reason for the increased interest was the rise in NPLs, as cited from the central bank's public notice on measures to address the NPLs syndrome. (BOT, 2018). In light of the preceding, there is reasonable evidence to believe that, though statistical results revealed the absence of a significant relationship between the above-mentioned variables; the present study found an indirect negative impact brought by TSA adoption due to the deterioration of the sector's performance since the inception of the TSA model. It is therefore fertile for a similar study to be carried out to assess the long-run impact of TSA on bank performance after sometimes.

(iii)Inflation Rate and Banks' Management Performance (Cost-to-Income Ratio)

Regarding the inflation rate, the results were negative and statistically significant (18.126, p<0.1) after TSA, whereas the same was positive but statistically insignificant before TSA. The above implies that after TSA, a 1% decrease in the inflation rate brought about an increase in the cost-to-income ratio by 18.126%, thus deteriorating management performance. It was revealed that, during the post-TSA adoption, the banking sector was characterized by an increase in NPLs, and other non-interest expenses, thus causing the cost-to-income ratio to deteriorate. Evidence is drawn from tables 4.13 and 4.16, where the cost-to-income ratios for almost all bank classifications have deteriorated significantly after TSA adoption. A review of the Central Bank of Tanzania statistics shows that, after TSA adoption, the inflation rate declined from 9.28% to 4.14%, paralleled by a decline in GDP growth rate from 16.55% to 9.91% after TSA adoption. The GDP growth rate was expected to move the other way round due to the decline in the inflation rate; however, the review of statistics has demonstrated a declined GDP growth rate. The introduction of TSA, therefore, can be cited as one of the reasons for the deteriorating GDP growth rate, thus deteriorating customers' deposits and bank loans as well as the cost of monitoring and controlling the same. As a result, during the post-TSA adoption period, the banking industry's NPLs increased significantly. The increase in NPLs was paralleled by a general increase in other non-interest expenses, thus increasing the cost-to-income ratio. Commercial banks were prompted to increase their interest rate to cover the risk premium associated with high NPLs (BOT, 2018).

As the inflation rate rises, chances for a bank's profitability to decline are high as inflation can increase salary and operational costs. However, banks can adjust interest rates accordingly to accommodate an increase in the inflation rate. Banks can improve revenue ahead of running costs, eventually boosting profitability. (Trujillo-Ponce, 2013). In light of the above, though the inflation rate declined during the post-TSA adoption period, banks were forced to either raise or maintain their interest due to the high risk of NPLs and other non-interest expenses.

4.7.3.1.3   Relationship between GDP Growth Rate and Banks' Performance

This subsection discusses the influence of inflation on bank financial, regulatory and management performance. The discussion is detailed in roman (i) to (iii) below.

(i)   Relationship between GDP Growth Rate and Banks' Financial Performance (ROA, ROE and NIM)

The effect of the GDP growth rate on the overall bank performance has declined after TSA adoption compared to the position before TSA. As for the case of ROA, the impact was negative and significant (-0.01, $p<0.05$) after TSA, whereas the same was positive and statistically significant (0.02, $p<0.01$) before TSA. The effect on ROE was consistent with ROA. The result was negative and significant (-0.096, $p<0.01$) after TSA, whereas the same was positive and statistically significant (0.121, $p<0.01$) before TSA. In the same vein, the effect turned negative and significant (-0.028, $p<0.05$) for NIM after TSA, compared to a positive and significant impact (0.283, $p<0.01$) before TSA.

Table 4.18 shows that the average GDP growth rate decreased by 40%, from 16.55% before TSA to 9.91% after TSA adoption. It should be appreciated that GDP measures the overall market or monetary value of all final goods and services manufactured within the country in a particular period. Therefore, GDP can tell or predict a specific country's economic health status. As the above ratios show, the GDP growth rate was on the lower side after TSA adoption, implying that production activities were down during the period. During this period, five banking institutions were in critical positions; some had shut down operations, while others had merged with giant banking institutions.

Moreover, banking institutions were a bit reluctant to lend to the private sector due to the growth of NPLs. It should be appreciated that, immediately after TSA adoption, the government adjusted its focus from recurring expenditure to capital expenditure. In the same vein, the withdrawal of government deposits from the commercial banking system had affected some banks' ability to lend to the private sector, causing less money circulation in the economy and thus a low GDP growth rate. It was not until the central bank intervened by issuing a circular on measures to boost lending to the private sector meanwhile cutting down NPLs (BOT, 2018). The study witnessed a decline in both ROA and ROE. Financial statements analysis revealed that the sectors' ROA declined from 2.47% to 1.62%, paralleled by a decrease in ROE from 13.06% to 6.31%.

The above results partially reject the null hypothesis that the influence of industry-specific and country-wide variables has no significant impact on bank performance

before and after TSA adoption. Regression results have recorded diverse results such that at one point, the results were statistically significant and, at another point, statistically insignificant, thus making it challenging to come up with a generalized conclusion. However, based on the results of financial analysis in Tables 4.9 and 4.10, the study found that, regardless of statistical significance, TSA has directly or indirectly affected bank performance, as evidenced by a general decline in bank performance.

Moreover, the above regression results are positive and negative in different periods (before and after TSA adoption) and correspond to the previous studies, which came up with diverse results. The study by Al-Homaidi, et al. (2018) on the influence of specific factors and macro-economic factors affecting Indian commercial banks' profitability found that all the macroeconomic factors, namely (i) exchange rate, (iii) inflation rate, (ii) interest rate as well as (iv) GDP have recorded a significant negative association with performance on commercial banks operating in India. The results are also consistent with the studies by (Bolt et al., 2012; Calza et al., 2006; Jiménez et al., 2009), who revealed that operational cost, net interest income and loan losses are the three major channels that are positively impacted by the real GDP growth. During the economic recession, the profitability of many sectors declines and improves during the period of expansion of economic activities. In light of the preceding, bank loan and customer deposit growth as GDP grows, such as enhancing banks' net interest margin and achieving a decline in loan losses. In light of the above studies, there is reasonable evidence to conclude a positive association between GDP growth rate and bank performance. It was revealed in table 4.18 in the previous sections above that, during

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the post-TSA adoption, the GDP growth rate declined from 16.55% before TSA to 9.91% after TSA adoption. Consequently, the overall profitability declined, as evidenced by financial analysis in tables 4.9 and 4.10 in the previous sections above.

(ii) Relationship between GDP Growth Rate Versus Banks' Regulatory (CAMELS) and Banks' Management Performance (Cost-to-Income Ratio)

Regression results for GDP growth rate were not statistically significant; however, as highlighted above, the economy was characterized by a general decline in GDP growth rate. The noted deterioration provides a clear picture as to why there was a deterioration of the banking sector's performance. As highlighted in the study by Bolt et al. (2012), it was revealed that an adverse economic environment such as a decline in GDP may deteriorate customers' deposits and bank loans and the cost of monitoring and controlling the same. Earlier studies on the influence of exchange rates assert that not only are the banks with foreign currency activities affected by exchange rates; also, even those without foreign transactions and operations can be indirectly affected by exchange rate movements (Chamberlain et al., 1997). As such the deterioration of these macro-economic variables, there is strong evidence to believe that, though statistical results revealed the absence of a significant relationship between the variables above, the present study has evidenced an indirect negative impact brought by TSA. We have witnessed a significant deterioration in the sector's performance since the inception of the TSA model. It is therefore fertile for a similar study to be carried out to assess the long-run impact of TSA on bank performance after sometimes.

4.7.1.4 Relationship between Exchange Rate and Bank Performance

This subsection discusses the influence of exchange rates on bank financial, regulatory and management performance. The discussion is detailed in roman (i) to (iii) below.

(i) Relationship between Exchange Rate and Banks' Financial Performance (ROA, ROE and NIM)

The effect of the exchange rate on the overall bank financial performance has declined after TSA adoption compared to the position before TSA. As for the case of ROA, the impact was positive and statistically significant (9.81e-06, $p<0.05$) before TSA, but the same became negative and statistically insignificant (at a coefficient of – 0.0000203) after TSA. The effect on ROE was consistent with ROA, only that the results were not statistically significant. In the same vein, after TSA, the outcome turned negative and significant (–0.001, $p<0.01$) for NIM, compared to a positive and significant impact (0.0001, $p<0.01$) before TSA.

The above results partially reject the null hypothesis that the influence of industry-specific and country-wide variables has no significant impact on bank performance before and after TSA adoption. Regression results have recorded diverse results such that at one point, the results were statistically significant and, at another point, statistically insignificant, thus making it challenging to come up with a generalized conclusion. However, based on the results of financial analysis in Tables 4.9 and 4.10, the study found that, regardless of statistical significance, TSA has either directly or indirectly affected bank performance, as evidenced by a general decline in bank performance.

Moreover, the above regression results are positive and negative in different periods (before and after TSA adoption) and correspond to the previous studies, which came up with diverse results. The study by Al-Homaidi, et al. (2018) on the influence of specific factors and macro-economic factors affecting Indian commercial banks' profitability found that all the macroeconomic factors, namely (i) exchange rate, (iii) inflation rate, (ii) interest rate as well as (iv) GDP have recorded a significant negative association with performance on commercial banks operating in India. Another study by Combey Adama and Togbenou Apelete (2017) assessed the influence of macro-economic variables on the performance of the banking sector in Togo using the 2006 to 2015 data. Inflation, effective exchange rate and GDP were the three macroeconomic variables applied in the study. The results revealed that macro-economic variables do not influence return on equity (ROE) and Return on Asset (ROA) in the short run. It was shown that ROA is closely associated with capital and the size of the bank, whereas ROE has a negative association with the bank's capital. On the other hand, in the long run, effective exchange rate, and real GDP growth, have a statistically significant negative association with the bank's ROA. In contrast, the inflation rate was assessed to have no impact. Regarding ROE, it was revealed that inflation, real GDP and effective exchange rate have a negative association with return on equity. The study recommended that the improvement of GDP, exchange rate and inflation rate can help the stability of the banking sector profitability; as such, policymakers and regulators should put a very close eye on these variables.

The above studies are in line with the analysis in Table 4.18. The same shows a significant depreciation of TZS against US$ by 38%. The results show that before TSA

exchange rate averaged TZS 1627/US$ hitting up to TZS2250/US$ after TSA. Exchange rate volatility exposes banks with foreign currency assets and liabilities to exchange rate risk. As TZS depreciates relative to US$, all foreign currency settlements become expensive, paralleled by impairment of foreign currency receivables. Consequently, banks with substantial foreign currency transactions were more affected by exchange rate volatility than those with minor foreign currency transactions. However, the effect is positive for banks with more foreign currency assets relative to foreign currency liability. A review of financial statements revealed a decline in the income ratio from foreign exchange trading to total income for almost all banks except for private banks. The study shows that foreign banks' ratio declined by 24% from 13.11% to 10.00% compared to domestic banks, whose ratio declined by 30% from 5.03% to 3.54%. Private banks' ratio increased by 9%, from 8.99% to 12.65%, compared to a 50% decline for state-owned banks, whose ratio declined from 7.9% to 4.00%. Lastly, large banks' ratio declined by 71% from 19.72% to 5.71% compared to small banks, whose ratio declined by 40% from 7.63% to 4.77%. In light of the above, there is reasonable evidence to conclude that the depreciation of TZS against US$ had negatively affected foreign exchange trading, as evidenced by a general decline in the forex income ratio.

Furthermore, the adoption of TSA has accelerated the impact of bank performance deterioration. In light of the above, the present stud revealed the presence of a negative association between exchange and bank performance. The depreciation of TZS against US$ by 38% (from TZS 1627/US$ to TZS 2250/US$) after TSA) negatively impacted

bank performance, as evidenced by a general decline of the sector's profitability in tables 4.9 and 4.10 in previous sections above.

(ii) Relationship between Exchange Rate Versus Banks' Regulatory Performance (CAMELS) and Banks' Management Performance (Cost-to Income Ratio).

Results for the exchange rate were not statistically significant; however, as highlighted above, the economy was characterized by a general decline in GDP growth rate and depreciation of the Tanzania shilling relative to US$. The deterioration of the variables above provides an accurate picture of the deterioration of the banking sector's performance. The study found that CAMELS ratings and Cost-to-Income ratios have deteriorated observably after TSA adoption meaning that TSA came with an indirect impact on banks' regulatory and management performances. It is therefore fertile for a similar study to be carried out to assess the long-run impact of TSA on bank performance.

4.7.3.1.5   An Overall Observation of the Hypothesis Testing on the Influence of Industry -Specific and Country-wide Variables on Bank Performance

Generally, the above regression results partially reject the null hypothesis, which states that the influence of industry-specific and country-wide variables has no significant impact on bank performance before and after TSA adoption. Regression results have recorded diverse results, as observed above. At one point, the results were statistically significant and statistically insignificant at another point, thus making it challenging to come up with a generalized conclusion. The results were statistically significant for interest rate but statistically insignificant for all other variables (GDP growth rate,

inflation and exchange rate). The above regression results correspond to the previous studies, which yielded mixed results, as highlighted by (Al-Homaidi et al.,2018; Jabeen and Rashid, 2016 and Yahya et al.,2017) who shed light that the affiliation between external variables and bank performance yielded inconclusive results. Therefore, the present study also concludes that the variables used to determine the statistical relationship between independent and dependent variables are the ones that count most. However, it is imperative to consider the influence of other interaction variables to confirm the robustness of the results. For the case of the present study, TSA was used as an interaction variable, and its inclusion has yielded fruitful results.

4.8   Robustness Test

This subsection does not form part of the study's research objectives, however since objectives one and two had paired bank performance in terms of ownership concentration and bank size, the study found it fertile to examine the relationship between risks and performance using ownership concentration and bank size as interaction variables. The results are discussed three-fold such that section 4.8.1 discusses financial performance, whereas regulatory and management performances are discussed in section 4.8.2 and 4.8.3 respectively.   A detailed report is appended as annexure one immediately after the list of references.

4.9   Chapter Summary

Tables 4.19 to 4.23 summarize the findings of the study by addressing all three research questions. The first research question examines whether the influence of ownership concentration has an impact on Tanzanian banking sector performance in

the ambience of the TSA system. Ownership concentration was addressed in terms of domestic versus foreign banks and private versus state-owned banks. Table 4.19 summarises the influence of ownership concentration (domestic versus foreign banks) on Tanzania's banking sector performance using TSA as an interaction variable.

Table 4. 19: Summarized Findings on Ownership Concentration (Domestic versus Foreign Banks) and Bank Performance using TSA as an Interaction Variable

(1). Domestic Versus Foreign Banks	Regression Results		Financial Analysis		Trend and Implication			Remarks
	Before TSA	After TSA	Before TSA	After TSA	Trend	Before TSA	After TSA	Overall performance
(A).Financial Performance	Coef.	Coef.	%	%	↑/↓	Final	Final	
• ROAD	Dummy Var.		0.88	0.62	↓			Domestic banks outperformed foreign banks in both periods using ROA as a performance nicator (before and after TSA)
• ROAF	N/S	N/S	0.87	0.59	↓			
• ROAI	-	-	2.47	1.62	↓	D > F	D > F	
• ROED	Dummy Var.		5.54	1.18	↓			Domestic banks outperformed foreign banks before TSA but the results were contrariwise after TSA using ROE as an indicator
• ROEF	N/S	N/S	5.07	1.93	↓			
• ROEI	-	-	13.06	6.31	↓	D > F	F > D	
• NIMD	Dummy Var.		5.23	5.02	↓			Domestic banks outperformed foreign banks in both periods using ROE as a performance indicator (before and after TSA)
• NIMF	-VE	+VE	3.60	3.94	↑			
• NIMI	-	-	7.71	6.92	↓	D > F	D > F	
(B). Regulatory Performance			Ratio	Ratio				
• CCRD	Dummy Var.		2.20	2.57	↑			Foreign banks outperformed domestic banks in both periods using CCR as an indicator
• CCRF	N/S	-VE S	2.12	2.08	↓	F>D	F>D	
(C). Management Performance			%	%				
• CIRD	Dummy Var.		452	999	↑			Foreign banks outperformed domestic banks in both periods using CCR as an indicator
• CIRF	N/S	N/S	315	784	↑	F>D	F>D	

Hypothesis testing came up with mixed results. At times regression results were significant or otherwise (before and after TSA). For the case of significant results, there was a mixture of +ve and -ve r/ships (before and after TSA).

ROA=Return on Asset, ROE=Return on Equity, NIM=Net Interest Margin, CCR=Composite CAMELS Rating, CIR=Cost-to-Income-Ratio, D=Domestic, F=Foreign, I=Industry, N/S=Non-Significant, S=Significant.

Table 4.20 summarises the second classification of ownership concentration and bank performance. As such the table shows the summarised findings on the influence of ownership concentration (private versus state-owned banks) on Tanzania's banking sector performance using TSA as an interaction variable.

Table 4. 20: **Summarized Findings on Ownership Concentration (Private versus State-Owned Banks) and Bank Performance Using TSA as an Interaction Variable**

	Regression Results		Financial Analysis		Trend and Implication			Remarks
(1). Domestic Versus Foreign Banks	**Before TSA**	**After TSA**	**Before TSA**	**After TSA**	**Trend**	**Before TSA**	**After TSA**	**Overall performance**
(A).Financial Performance	**Coef.**	**Coef.**	**%**	**%**	**↑/↓**	**Final**	**Final**	
• ROAP	N/S	N/S	0.89	0.55	↓			Private banks outperformed state-owned-banks in both periods using ROA as an indicator.
• ROAS	Dummy var.		0.54	0.39	↓	P > S	P > S	
• ROAI	-	-	2.47	1.62	↓			
• ROEP	N/S	N/S	4.44	0.97	↓			Private banks outperformed state-owned-banks before TSA but the results were contrariwise after TSA (Using ROE)
• ROES	Dummy var.		1.08	2.22	↑	P > S	S > P	
• ROEI	-	-	13.06	6.31	↓			
• NIMP	N/S	N/S	4.33	4.84	↑			State-owned-banks outperformed Private banks before TSA but the results were contrariwise after TSA (Using NIM)
• NIMS	Dummy var.		4.93	3.86	↓	S > P	P > S	
• NIMI	-	-	7.71	6.92	↓			
(B). Regulatory Performance			**Rating**	**Rating**				
• CCRP	N/S	N/S	2.36	2.57	↑			Private banks outperformed state-owned-banks banks in both periods (Using CCR)
• CCRS	Dummy var.		2.49	2.70	↑	P>S	P>S	
(C). Management Performance			**%**	**%**				
• CIRP	N/S	+VES	384	1164	↑			Private banks outperformed state-owned-banks banks in
• CIRS	Dummy var.		686	81	↓	P>S	S>P	

						both periods (Using CIR)
Hypothesis testing came up with mixed results. At times regression results were significant or otherwise (before and after TSA). For the case of significant results, there was a mixture of +ve and -ve r/ships (before and after TSA).						
ROA=Return on Asset, ROE=Return on Equity, NIM=Net Interest Margin, CCR=Composite CAMELS Rating, CIR=Cost-to-Income-Ratio, P=Private, S=State-Owned, I=Industry, N/S=Non-Significant, S=Significant.						

The second research question examines whether the influence of bank characteristics has an impact on Tanzanian banking sector performance in the ambience of the TSA system. Bank characteristics were addressed in terms of bank size and bank risks (credit and liquidity risk). Table 4.21 summarises the influence of bank size on Tanzania's banking sector performance using TSA as an interaction variable.

Table 4. 21(a): **Summarized Findings on Bank Size and Performance Using TSA as an Interaction Variable**

	Financial Analysis		Trend and Implication			Remarks
(1). Domestic Versus Foreign Banks	**Before TSA**	**After TSA**	**Trend**	**Before TSA**	**After TSA**	**Overall performance**
(A).Financial Performance	**%**	**%**	↑/↓	**Final**	**Final**	
• ROAL	1.73	1.18	↓			Small banks outperformed large banks in both periods using ROA as a performance indicator
• ROAS	3.27	2.06	↓	S > L	S > L	
• ROAI	2.47	1.62	↓			
• ROEL	9.48	4.66	↓			Small banks outperformed large banks in both periods using ROE as a performance indicator
• ROES	14.13	6.23	↓	S > L	S > L	
• ROEI	13.06	6.31	↓			
• NIML	3.57	3.73	↑			Small banks outperformed large banks in both periods using NIM as a performance indicator
• NIMS	13.26	12.82	↓	S > L	S > L	
• NIMI	7.71	1.18	↓			
(B). Regulatory Performance	**Rating**	**Rating**				
• CCRL	2.20	2.01	↑			Large banks outperformed small banks in both periods using CCR as an indicator.
• CCRS	2.48	2.52	↑	L>S	L>S	

(C). Management Performance	%	%				
• CIRL	253	1208	↑	L>S	S>L	Large banks outperformed small banks before TSA but contrariwise afterwards
• CIRS	926	1141	↓			
Regression Results (Asset Size – Large and Small)						
Financial Performance				*Hypothesis testing came up with mixed results. At times regression results were significant or otherwise (before and after TSA). For the case of significant results, there was a mixture of +ve and -ve r/ships (before and after TSA).*		
• Asset Size (ROA)	+VE S	-VE S				
• Asset Size (ROE)	N/S	-VE S				
• Asset Size (NIM)	N/S	+VE S				
Regulatory Performance						
• Asset Size (CCR)	+VE S	+VE S				
Management Performance						
• Asset Size (CIR)	N/S	N/S				

ROA=Return on Asset, ROE=Return on Equity, NIM=Net Interest Margin, CCR=Composite CAMELS Rating, CIR=Cost-to-Income-Ratio, L=Large, S=Small, I=Industry, N/S=Non-Significant, S=Significant.

Table 21 (b) below combines ownership concentration, bank size and performance to provide an overview of bank performance based on financial statement analysis. Generally, the table provides a summarized view of bank performance in terms of bank classification (ownership and size). The summary shows the results of the financial statement analysis.

Table 4.21 (b): Summary of the Overall Bank Performance in terms of Ownership and Bank Size

Overall Performance: Ownership, Bank Size, and Performance Vs Hypothesis Testing					
	Before TSA	After TSA		Before TSA	After TSA
Domestic Versus Foreign Performance			**Private Versus State-Owned Performance**		
ROA	D > F	D > F	**ROA**	P > S	P > S
ROE	D > F	F > D	**ROE**	P > S	S > P
NIM	D > F	D > F	**NIM**	S > P	P > S
CAMELS	F > D	F > D	**CAMELS**	P > S	P > S
CIR	F > D	F > D	**CIR**	P > S	S > P
Large Versus Small Banks' Performance			*Hypothesis testing came up with mixed results. At times regression results were significant or otherwise (before and after TSA). For the case of significant results, there was a mixture of positive and negative relationships (before and after TSA).*		
ROA	S > L	S > L			
ROE	S > L	S > L			
NIM	S > L	S > L			
CAMELS	L > S	L > S			
CIR	L > S	S > L			

As explained above bank characteristics were addressed in terms of bank size and bank risks (credit and liquidity risk). Table 4.22 summarises the influence of bank risks (credit and liquidity risk) on Tanzania's banking sector performance using TSA as an interaction variable.

Table 4. 22: **Summarized Findings on Bank Risks and Performance Using TSA as an Interaction Variable**

	Regression Analysis		Financial Analysis			Remarks
NPLs V Fin and Regulatory Performance.	**Before TSA**	**After TSA**	**Before TSA**	**After TSA**	**Trend**	
ROAI-Financial Perf.	- VE/S	N/S	2.47%	1.62%	↓	Generally, there's performance deterioration after TSA adoption.
CCRI-Regulatory Perf.	+ VE/S	N/S	2	3	↑	
Gross Loans to Deposits Versus Fin, Reg and Mgt Perf.	**Before TSA**	**After TSA**	**Before TSA**	**After TSA**	**Trend**	
ROEI-Financial Perf.	+ VE/S	N/S	13.06%	6.31%	↓	There's performance deterioration after TSA adoption. As Gross Loans to Deposit and NPLs ratios increase; bank performance deteriorates.
NIMI- Financial Perf.	+VE/S	N/S	7.71%	6.92%	↓	
CCRI-Regulatory Perf.	+ VE/S	- VE/S	2	3	↑	
CIRI-Management Perf.	+ VE/S	- VE/S	534.5%	622.5%	↑	
Hypothesis testing came up with mixed results. At times regression results were significant or otherwise (before and after TSA). For the case of significant results, there was a mixture of +ve and -ve r/ships (before and after TSA).						
ROA=Return on Asset, ROE=Return on Equity, NIM=Net Interest Margin, CCR=Composite CAMELS Rating, CIR=Cost-to-Income-Ratio, L=Large, S=Small, I=Industry, N/S=Non-Significant, S=Significant.						

As explained above industry-specific and country-wide variables were addressed in terms of interest rate, GDP growth rate, inflation rate and exchange rate. Table 4.23 summarises the influence of the aforementioned variables on Tanzania's banking sector performance using TSA as an interaction variable.

Table 4. 23: **Summarized Findings on Industry-specific and Country-wide Variables versus Performance Using TSA as an Interaction Variable**

	Regression Analysis		Financial Analysis			
Industry and Country-wide Variables Versus Financial and Regulatory Performance	Before TSA	After TSA	Before TSA	After TSA	Trend	
Exchange Rate-ROAI	+VE/S	N/S	2.47%	1.62%	↓	Macroeconomic variables influence performance before and after TSA. Regression results confirm the existence of the relationship.
Inflation Rate -NIMI	-VE/S	+VE/S	7.71%	6.92%	↓	
Exchange Rate - NIMI	+VE/S	-VE/S	7.71%	6.92%	↓	
GDP Growth Rate - NIMI	-VE/S	N/S	7.71%	6.92%	↓	
Industry and Country-wide Variables Versus Regulatory Performance	Before TSA	After TSA	Before TSA	After TSA		
Interest Rate - CCRI	-VE/S	+VE/S	2	3	↑	Performance deteriorates after TSA
Industry and Country-wide Variables Versus Management Performance.	Before TSA	After TSA	Before TSA	After TSA	Trend	
Inflation Rate - CIRI	N/S	-VE/S	534.5%	622.5%	↑	Performance deteriorates after TSA
Hypothesis testing came up with mixed results. At times regression results were significant or otherwise (before and after TSA). For the case of significant results, there was a mixture of +ve and -ve r/ships (before and after TSA).						
ROA=Return on Asset, ROE=Return on Equity, NIM=Net Interest Margin, CCR=Composite CAMELS Rating, CIR=Cost-to-Income-Ratio, L=Large, S=Small, I=Industry, N/S=Non-Significant, S=Significant.						

CHAPTER FIVE

CONCLUSION AND IMPLICATIONS

5.1 Introduction

This chapter endeavors to provide a comprehensive conclusion and overall recommendations derived from the study's findings, as elucidated in the preceding chapter. The introductory segment is contained within the current subsection, while the summary and conclusion are expounded in subsection 5.2. Subsequently, the study recommendations are delineated in subsection 5.3. In addition to these aspects, the chapter conscientiously addresses study limitations in subsection 5.4 before proposing avenues for future research in subsection 5.5.

5.2 Summary and Conclusion

The study investigated the impact of ownership concentration, bank characteristics, and industry-specific and country-wide variables on the banking sector's performance in Tanzania, utilizing a pre-and-post Treasury Single Account Analysis (TSA). The analysis involved balanced panel data spanning 2010 to 2020, encompassing 30 banking institutions. Regulatory, financial, and management performances were the dependent variables, while ownership concentration, bank characteristics, and industry/country-wide variables served as independents. The study successfully achieved the three outlined objectives from chapter one, focusing on financial performance (ROA, ROE, NIM), regulatory performance (CAMELS ratings), and management performance (CIR). Further details on each objective are expounded in subsections 5.2.1, 5.2.2, and 5.2.3.

5.2.1 Relationship between Ownership Concentration and Bank Performance

The first objective assessed the affiliation between ownership and bank performance before and after TSA adoption. Domestic and foreign banks and private and state-owned banks were paired. Performance was measured threefold; financial, regulatory and management performance as highlighted in (i) to (iii) below.

(i) Relationship between Ownership Concentration and Banks' Financial Performance (ROA, ROE and NIM)

While regression results show non-significant results on domestic banks, foreign private and state-owned banks' ROA and ROE; foreign banks' NIM was negative and statistically significant before TSA and the coefficient turned positive and significant after TSA. The shift in NIM's coefficient implies that domestic banks benefited from government deposits pre-TSA, leading to a decline in NIM post-TSA due to the withdrawal of such deposits. In conjunction with regression results, financial statements analysis provides solid evidence that regardless of statistically insignificant results on ROA and ROE, the post-TSA financial performance (ROA, ROE and NIM) for the overall banking sector deteriorated. Moreover, bank performance was paired in terms of banks' classification, and the results revealed that domestic banks outperformed foreign banks in both periods (before and after TSA adoption) using ROA as a performance indicator. On the other hand, domestic banks' ROE superseded foreign banks' ratio before TSA; however, the results were contrariwise after TSA. In general, though foreign banks' ROE exceeded domestic banks' ratio after TSA, the results still confirm that domestic banks in Tanzania are still superseding foreign banks' profitability. In ensuring their stability, foreign banks incur a huge personnel

cost to hire competent staff thus increasing non-interest expenses and reducing their profitability compared to domestic banks.

On the other hand, before and following the TSA's adoption, private banks outperformed state-owned banks in terms of ROA and NIM. In the same vein, private banks had better ROE before TSA, but state-owned banks outperformed them after TSA, presumably due to the government's capital infusion and the 2018 merger of three state-owned banks, which prevented them from collapsing. The above notwithstanding, the eleven-year (2010-2020) average ROE for private banks was still above the state-owned banks' ROE. The present study confirms prior studies that, private banks' performance is more likely to supersede state-owned banks' performance due to weak controls exercised by state-owned banks compared to private ones.

(ii) Linear Relationship between Ownership Concentration and Banks' Regulatory Performance (CAMELS Ratings)

Regression analysis shows a negative and statistically significant effect that, after TSA adoption, foreign banks performed significantly better than domestic banks. Remarkably, positive and statistically insignificant results were seen before TSA adoption, suggesting that the ownership element did not affect bank performance. According to the present study, for both state-owned and privately held banks, the effect of ownership and TSA on CAMELS ratings is not statistically significant over the study period. But as financial statement analysis shows, foreign banks continuously do better than domestic banks, even in the face of TSA adoption. This is because they

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have a larger capital base, more sophisticated technology, and highly qualified employees. On the other hand, while both private and state-owned banks' CAMELS ratings deteriorated after TSA adoption, the study found that private banks outperformed state-owned banks in both periods. It is noteworthy that, state-owned banks were the primary beneficiaries of government deposits; thus, the withdrawal of government deposits primarily affected banks' liquidity position and asset quality due to high post-TSA NPLs for the state-owned banks and the overall banking sector. Eventually, state-owned banks' profitability and capital have been significantly affected thus calling for the merger of three state-owned banks (Tanzania Women's Bank, Twiga Bankorp and Tanzania Postal bank to rescue the position.

(iii) Linear Relationship between Ownership Concentration and Banks' Management Performance (Cost-to-Income Ratio)

The findings of the regression show that following the adoption of the TSA, private banks' cost-to-income ratio significantly increased, indicating a deterioration in management abilities. However, when their cost-to-income ratio decreased after the TSA, state-owned banks showed better management performance. It appears that neither ownership nor TSA had an evocative effect on the performance of foreign or domestic banks, since the impact was statistically insignificant both before and after TSA. Financial statement analysis shows that foreign banks kept their cost-to-income ratios lower than those of domestic banks, and when the TSA was adopted, their ratios further decreased. The aforementioned observation implies that foreign banks exhibit better managerial performance than domestic banks. This could partially be explained

by their focus on profit given the high risk they take to invest in foreign countries, and significant capital leverage compared to domestic banks.

Private banks had a lower cost-to-income ratio than state-owned banks at first, but this changed after the TSA adoption since the state-owned banks' ratio decreased as a result of the state-owned bank's merger. Given past performance, the positive effect of TSA for state-owned banks may only last temporarily thus calling for further research to see whether these results hold over time.

5.2.2 Relationship between Bank-Specific Characteristics and Bank Performance

The second objective was to examine whether the influence of bank-specific characteristics has a significant impact on bank performance before and after TSA adoption. The linear relationship between bank-specific characteristics and banks' performance was carried out. Bank-specific characteristics have been defined in two forms (bank size and bank risks). Asset size was used as a proxy for bank size, whereas Gross Loans to total deposits and NPLs ratios were used as proxies for banks' risks. Moreover, ROA, ROE and NIM were used as financial performance indicators. In contrast, CAMELS ratings and Cost-to-Income Ratios were regulatory and management performance proxies, respectively. The summary of regression results is highlighted below:

(i)   Linear Relationship between Bank Characteristics and Banks' Financial Performance (ROA, ROE and NIM)

As highlighted above, bank characteristics have been subdivided into two elements; asset size as a proxy for bank size and NPLs and Gross Loans to Total Deposits as

proxies for bank risk. The discussion on asset size was analyzed in terms of large and small banks,

- **Large and Small Banks**

Before the implementation of the TSA, bank size had a positive and significant impact on ROE and ROA, meaning that a rise in asset size was associated with a comparable increase in these ratios. The low NPLs ratios before TSA were credited with this favourable correlation. The effect of bank size, however, changed after TSA and became statistically significant. For every rise in asset size, there was a reduction in ROE and ROA by the designated coefficients. Increased non-interest expenses and bad debt provision were linked to this drop. According to the study's rejection of the null hypothesis, bank features do not significantly affect performance before or after TSA, which is consistent with the varied findings of earlier research. According to financial analysis, small banks perform better than large banks in terms of ROA and ROE suggesting that, the benefits that big banks receive from economies of scale are offset by cost control since role delegation to managers for business supervision and borrower follow-up may outweigh the benefits of scale.

Based on post-TSA positive and statistically significant regression results, the study shows that Net Interest Margin (NIM) improved relative to the pre-TSA phase. It is noteworthy that, during the study period a large proportion of large banks were foreign-owned and were not the primary beneficiaries of government deposits. As a result, large banks recorded a higher NIM compared to small banks post-TSA as small banks went short of the free deposits from the government. The above notwithstanding,

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small banks, on the other hand, continuously kept their NIM ratios higher during both times. Small banks performed better off than larger ones in terms of ROA, ROE, and NIM, the study finds, defying the efficiency theory. According to Panagiotis et al. (2018), monitoring expenses at large banks can outweigh the benefits of economies of scale, which runs counter to the idea that these huge institutions enjoy.

(ii) **Linear Relationship between Bank Characteristics and Banks' Regulatory Performance (CAMELS Rating) and Management Performance (Cost-to Income Ratio)**

As highlighted in chapter previous chapters, bank characteristics were discussed in terms of bank size and risks. A summarized discussion on each part follows below.

- **Size and Bank Performance**

Regression results highlight a post-TSA deterioration in CAMELS ratings and cost-to-income ratios, accompanied by increased gross loans to total deposits, NPLs ratios, and non-interest expenses. Despite mixed regression results, financial statement analysis indicates a direct or indirect association between bank size and TSA with performance. Consistent with previous studies, large banks generally recorded better CAMELS ratings, but small banks had slightly lower cost-to-income ratios after TSA. Panagiotis et al. (2018) found divergent results on bank size and efficiency, emphasizing the offsetting effect of monitoring costs on large banks' economies of scale.

- **Risks (NPLs and Gross Loans to Total Deposits Ratios) and Bank Performance**

Different results were obtained from the regression analysis that examined the relationship between bank performance and gross loans to total deposits and non-performing loans (NPLs). The study indicated that risk variables (NPLs and LTD) and performance had a mixture of positive and negative relationships, both before and after the TSA adoption. Drawing from financial statement analysis, it was revealed that in addition to higher gross loans to total deposits and NPLs ratios, Tables 4.13 and 4.16 show a general deterioration in CAMELS ratings and Cost-to-Income ratios. A combination of statistically significant and insignificant results was shown in the regression results for the CAMELS ratings and cost-to-income ratios. As highlighted above, the financial analysis results provide evidence that TSA, the gross loans to total deposits, and NPLs ratios directly or indirectly affect banks' performance and a general decline in bank performance was observed post-TSA adoption following an increase in LTDs and NPLs.

5.2.3 Relationship between Industry-Specific and Countrywide Variables and Bank Performance

The third objective was to examine whether the influence of industry-specific and country-wide variables significantly impacted bank performance before and after TSA adoption. Therefore, linear relationships were carried out between interest rate, inflation rate, exchange rate, GDP growth rate and performance. Bank performance was classified into financial, regulatory and management performance. Return on Asset (ROA), Return on Equity (ROE) and Net Interest Margin (NIM) were proxies for financial performance. In contrast, CAMELS ratings and Cost-to-Income Ratios

were regulatory and management performance proxies, respectively. It is also imperative to note that, this section discusses the overall bank performance without classifying banks into different categories. It shows the overall banking sector's position. The summary of regression results is highlighted below:

- **Financial Performance (ROA, ROE and NIM)**

Though the effects differed, interest rates continuously affected banks' performance on measures like ROA, ROE, and NIM both before and after TSA. Interest rates had a positive and considerable impact on ROA, ROE, and NIM before to TSA; but, following TSA, the impact on these measures was negative and significant. Even with more interest income, the banking industry had difficulties after the TSA due to rising NPLs and bad debts, which threatened profitability. The influence of inflation rates, particularly on Net Interest Margin (NIM), shifted from being negative and considerable before TSA to being positive and important thereafter. This suggests that NIM rose in tandem with inflation. However, during the post-TSA period, despite a decline in inflation, interest rates slightly increased due to a rise in NPLs, as noted in the Central Bank of Tanzania circular. The results for ROA and ROE were not statistically significant in establishing a clear relationship between inflation rates and bank performance.

After TSA adoption, the impact of the GDP growth rate on overall bank performance diminished compared to the pre-TSA period. For ROA and ROE, the effect became negative and significant, contrasting with the positive and significant impact observed before TSA. This decline coincided with a reduction in the average GDP growth rate,

indicative of decreased production activities and an economic downturn after TSA. Five banks faced critical situations, leading to closures and mergers. The withdrawal of government deposits further impeded banks' ability to lend to the private sector, contributing to a low GDP growth rate. Financial statements analysis revealed declining ROA and ROE during this period.

In the same vein, the post-TSA bank financial performance deteriorated due to exchange rate volatility compared to the pre-TSA phase. Notably, the impact on ROA was positive and statistically significant before TSA, but it became negative and statistically insignificant following TSA. The ROE results were similar to the ROA, but not statistically significant. NIM showed a negative and significant influence post-TSA, which contrasted with its positive and significant results pre-TSA. These results underscore the complex economic issues that the banking sector experienced following the adoption of the TSA and point to a direct link between GDP growth rate, exchange rate, and bank profitability.

- **Regulatory Performance (CAMELS Rating) and Management Performance (Cost-to Income Ratio) for the overall banking sector**

Before TSA, regression results on the CAMELS rating were negative and significant, suggesting an increase in interest rate decreases the CAMELS rating thus improving the performance as the rating reads better results when the rating is low. Conversely, the post-TSA positive coefficient implied deteriorating performance. The post-TSA CAMELS rating deterioration is evident in Table 4.13. Results for inflation, GDP growth, and exchange rate weren't significant, but the overall economic decline mirrored the banking sector's performance decline. Bolt et al. (2012) highlighted how

unfavourable economic circumstances, such as a drop in GDP, might affect deposits, loans, and monitoring expenses, which is consistent with the reported fall in the banking sector following the implementation of the TSA.

Management performance, measured by the Cost-to-Income Ratio, displayed mixed results. After TSA, a decrease in the inflation rate significantly increased the cost-to-income ratio, indicating deteriorating management performance. Post-TSA, the banking sector faced increased NPLs and non-interest expenses, contributing to the ratio's deterioration. Interest rate, GDP growth, and exchange rate were not statistically significant, yet the overall economic decline, reflected in GDP and currency depreciation, accurately depicted the banking sector's deterioration. Tables 4.19 and 4.20 demonstrated significant post-TSA deterioration in cost-to-income ratios across various bank classifications, aligning with the adverse economic conditions observed.

5.3 Study Implications

In light of the findings presented in chapter four, the study forms the basis for policy recommendations to the banks' management, regulators, policymakers, education authorities and councils and the general public. Highlighted below are among the measures suggested to improve banks' performance in Tanzania.

Commercial banks are strongly urged to divert from reliance on government funds by investing in the search for appropriate methods to mobilize deposits from the general population. Much of Tanzania's population remains un-bankable, according to the 2017 Finscope report. As such commercial banks, could draw in a sizable number of deposits in light of that. Consequently, the financial intermediation process will be improved if commercial banks can draw in customers by offering deposit options. That being said, banks can expand their lending activities to the private sector, which will enhance wealth and encourage job creation.

Furthermore, banks should consider extending their reach to rural areas, particularly those currently underserved by formal financial services. The Tanzanian banking sector is predominantly focused in urban areas, leaving rural regions underserved. While community banks operate in some localities, many lack sufficient capital and struggle to hire competent personnel, hindering profitability. Moreover, the communities in these areas may hesitate to deposit funds in these banks due to a history of underperformance. Large commercial banks are urged to establish branches in rural areas, leveraging their reputation, size, and economies of scale. The presence of community banks in certain areas signals those commercial banks, with long-term strategies, can successfully enter and establish a presence in rural markets.

Leveraging advanced technologies, particularly through mobile banking services, can facilitate financial inclusion. E-banking services enable commercial banks to reach a wider audience and establish a robust infrastructure of branchless operations, reducing the need for physical bank branches except in strategic locations. To achieve this, investments in capacity building are essential. Banks are advised to enhance the skills of their ICT personnel, ensuring they are competent and well-versed in advanced technologies. Furthermore, non-ICT personnel involved in daily e-banking operations should receive training to keep pace with technological advancements.

Moreover, commercial banks should explore collaborations with mobile service operators, recognizing that a substantial unbanked population often relies on mobile services provided by telecommunication companies such as MPESA, TIGO PESA, and AIRTEL MONEY, among others. These mobile service operations have widespread coverage, making it convenient for any residents to manage their finances through these channels. To capitalize on this, commercial banks can establish partnerships with mobile bank operators, encouraging every mobile money user to open a bank account with a partnering commercial bank. Creating an appealing environment and offering incentives, such as favorable loan terms or attractive interest rates on deposits, can motivate mobile money users to embrace the opportunity.

Furthermore, commercial banks are urged to reinforce compliance with prudential and statutory guidelines by implementing robust credit and liquidity risk management systems to mitigate associated risks. The study identified that post-TSA adoption, nearly every bank experienced elevated Non-Performing Loans (NPLs) ratio surpassing the acceptable limit of 5%. Alongside implementing effective credit and liquidity management systems, banks should adopt stringent screening policies when hiring trustworthy staff to operate with integrity in the best interest of the bank. The 2021 public notice from the Bank of Tanzania (BOT) highlighted that dishonest and fraudulent practices by bank employees, by circumventing established procedures for personal gain, were significant contributors to the high NPLs.

State-owned banks, in particular, are advised to refrain from extending direct loans to the general public without implementing effective loan monitoring and recovery mechanisms. The study revealed that even after the 2018 merger of three state-owned banks, the Non-Performing Loans (NPLs) ratio for state-owned banks remained elevated at 10.94%. The merger, undertaken to rescue two state-owned banks facing critical conditions, did not sufficiently address the persistent high NPLs. To enhance their financial stability and mitigate risks, state-owned banks should prioritize robust mechanisms for monitoring and recovering loans to ensure responsible lending practices.

The government should collaborate with banking institutions to enhance financial literacy through diverse awareness channels, such as television and radio stations, social media, and religious institutions. Moreover, the government, through Tanzania Education Authorities/Councils, should develop a syllabus that introduces students to essential banking knowledge from an early age. Given the government's subsidization of primary and secondary education in Tanzania, implementing such a syllabus could effectively reach a significant portion of the population. This proactive approach aims to foster financial literacy among citizens and empower them with the necessary knowledge for making informed financial decisions.

The government should persist in fostering an appealing environment for tourism, industrial investments, and other key economic sectors to enhance the country's GDP, thereby increasing money circulation. A growing economy leads to higher bank deposits, facilitating lending activities and strengthening intermediation. However, the study revealed a post-TSA period characterized by diminished productivity, evident in the declining GDP growth rate. This downturn adversely impacted bank deposits, constraining lending to the private sector. Despite the 2018 BOT circular promoting private-sector lending, banks remained hesitant during this period. The declining GDP growth underscores a liquidity shortage, prompting banks to curtail lending. Hence, the government is urged to sustain efforts in creating an enticing environment for industrial investments to revitalize the economy.

5.4 Study Limitations

A balanced panel of data sets encompassing thirty banking institutions that operated between 2010 and 2020 was used in the analysis. Nevertheless, a small number of banking institutions were left out of the study due to scheduling issues. Although the study was primarily focused on institutions that were in existence between 2010 to 2020, all institutions that started operations after 2010 were excluded regardless of size or significance within the industry. Furthermore, the five-year post-TSA adoption period which ran from 2016 to 2020 is considered short. To verify the long-term effects of TSA, a more thorough analysis might be taken into consideration. Moreover, the analysis did not include some control variables such as changes in the universal economic state or fluctuations in regulatory atmosphere that are instrumental in persuading bank performance.

5.5 Direction for Further Research

The present study covered the eleven years from 2010 to 2020. It would be interesting for a similar study with the same study variables to be conducted after some years to test the long-run implication of the Treasury Single Account system on bank performance.

Moreover, it would be interesting for further researchers to conduct a similar study using the same study variables to check the influence of these variables on the performance of banks only in the institutions that were the primary beneficiaries of government deposits.

Furthermore, the current study examined how industry-specific and country-wide variables impact Tanzania's overall banking sector performance. Future researchers are encouraged to explore the interaction of these variables with ownership and bank characteristics, delving into their influence on various bank classifications

Additionally, further researchers could find it intriguing to conduct a comparable study employing identical variables to examine their impact on liquidity position and asset quality. The study could utilize CAMELS ratios as performance indicators in exploring these aspects further.

Lastly, further researchers could enhance the robustness of their studies by including formal test statistics, such as a pre-and-post TSA period difference test. While trend analysis aids visualization, these statistics can strengthen inferences and conclusions.

5.6 Chapter Summary

The hypothesis testing yielded varied outcomes, with regression results being significant or insignificant both before and after the implementation of the Treasury Single Account (TSA). In instances where results were significant, there were combinations of positive and negative relationships observed both before and after the TSA. As outlined earlier, industry-specific and country-wide variables, such as interest rate, GDP growth rate, inflation rate, and exchange rate, were considered.

The Treasury Single Account (TSA) was identified as a factor impacting bank performance, either directly or indirectly, leading to a decline in performance

according to financial statements analysis post-TSA adoption. The study categorized banks based on ownership concentration and size, revealing that, based on performance indicators like ROA, ROE, and NIM, domestic, private, and small banks surpassed their counterparts: foreign, state-owned, and large banks. However, when considering the Cost-to-Income Ratio and the overall CAMELS rating, the study indicated that foreign, private, and large banks outperformed domestic, state-owned, and small banks, respectively.

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ANNEXURE ONE: A DETAILED DISCUSSION ON THE ROBUSTNESS TEST

The relationship between risk and bank performance using ownership concentration and bank size as interaction variables is discussed in detail below. Subsection 4.81 focused on financial performance followed by regulatory and management performance in subsections 4.8.2 and 4.8.3 respectively. Table 4.24 shows the regression results on financial performance.

Table 4. 24: Relationship Between Bank Risks and Financial Performance (ROA, ROE and NIM) using Ownership Concentration and Bank Size as Interaction Variables

	Dependent variables					
	ROI		ROE		NIM	
Variable	Coefficient	Test Statistics	Coefficient	Test Statistics	Coefficient	Test Statistics
DOMESTIC*NPLs	0.042	2.56** (0.024)	N/S	N/S	N/S	N/S
FOREIGN*NPLs	-0.032	-5.07*** (0.000)	–0.366	–3.43*** (0.000)	0.213	2.11** (0.035)
DOMESTIC*LDR	N/S	N/S	0.123	3.68*** (0.000)	0.11	3.80*** (0.000)
FOREIGN* LDR	–0.068	–4.39*** (0.000)	N/S	N/S	N/S	N/S
PRIVATE*NPLs	–0.051	–3.41*** (0.000)	–0.209	1.84* (0.077)	N/S	N/S
STATE*NPLs	0.062	3.34** (0.044)	N/S	N/S	N/S	N/S
STATE* LDR	N/S	N/S	0.199	4.07** (0.027)	0.168	1.84* (0.065)
LARGE*NPLs	–0.09	-4.44*** (0.000)	–0.574	–3.60*** (0.000)	N/S	N/S
SMALL*NPLs	N/S	N/S	0.063	1.90* (0.071)	N/S	N/S
LARGE*LDR	N/S	N/S	N/S	N/S	0.08	3.51*** (0.000)
SMALL* LDR	N/S	N/S	N/S	N/S	0.88	1.90* (0.058)
I.TSA#DOMESTIC*NPLs	–0.119	-6.80*** (0.000)	–0.427	–2.38** (0.033)	N/S	N/S
I.TSA#DOM*LDR	N/S	N/S	–0.15	–2.39** (0.014)	0.111	3.54*** (0.000)
I.TSA#FORE*LDR	N/S	N/S	N/S	N/S	N/S	N/S
I.TSA#STATE*NPLs	–0.126	-9.30*** (0.000)	N/S	N/S	0.279	3.10*** (0.000)
I.TSA#STATE*LDR	–0.035	2.24* (0.06)	–0.239	–3.59** (0.037)	N/S	N/S

Note that: *, **, and *** imply that the variable is statistically significant at 10%, 5% and 1%significance levels. The panel data results are reported using t-statistics, whereby the p-values are put in parenthesis. Any variable named after a numeric coefficient (1.) represents a dummy variable. E.g. 1. TSA represents TSA as a dummy variable. Moreover, any variable tagged with # implies TSA interaction. UN-WINS means a variable that was not winsorized at any winsorization fraction. N/S = Non-Significant.

In addition to the above regression results, this study used financial analysis to complement and amplify regression results in Table 4.24 above for each of the bank classifications (i.e. domestic versus foreign banks, private versus state-owned banks, and large versus small banks) by computing banks' financial ratios, namely ROA, ROE and NIM, with the views of observing the trend of bank performance for the period under review. Moreover, to make the study more interesting, the analysis was extended by comparing banks' specific financial performance (ROA, ROE and NIM) to the

average industry ratios from annual financial sector supervision reports published by the central bank of Tanzania from 2010 to 2020.

4.8.1 Relationship Between Risks and Bank Financial Performance (ROA, ROE and NIM) using Ownership Concentration and Bank Size as Interaction Variables

This subsection presents results in four parts. The first part discusses the influence of NPLs on bank performance, whereas the second part focuses on the influence of gross loans to total deposits on bank performance. The third aspect covers the overall literature to back up the findings in parts one and two. This is because, these two risk indicators (NPLs and gross loans to total deposits) share similar characteristics and several studies, have discussed bank risks as a whole by covering both credit and liquidity risks as key risk indicators. As such in order to avoid repetition of similar literature on each regression result, this study discussed a generalized literature covering both credit and liquidity risks using NPLs and gross loans to total deposit ratios as proxies for credit and liquidity risk respectively. As highlighted above, ownership concentration was used as an interaction variable to check the influence of risk (NPLss and gross loans to total deposits) on bank performance. Lastly, the fourth part discusses the results of financial analysis by showing trends of bank performance categorically (domestic vs foreign banks) and (private vs state-owned banks), paralleled by NPLss and gross loans to total deposit ratios. The latter provides a detailed analysis of financial performance before and after TSA adoption.

a) Ownership Concentration and Bank Financial Performance

This section discusses the influence of risk (NPLs and Gross Loans to Total Deposits) on bank performance. Bank performance is discuses in terms of ownership concentration i.e. (domestic vs foreign banks) and (private vs state-owned banks)

(i) Relationship Between NPLs and Banks' Financial Performance (ROA, ROE and NIM) using Domestic and Foreign Banks as Interaction Variables

When performance is measured in terms of ROA, the effect of the NPLs ratio on domestic banks' ROA before TSA was positive and statistically significant (0.042, $p<0.05$) and became negative and statistically significant (-0.119, $p<0.01$) after TSA. The above implies that a 1% increase in NPLs before TSA positively impacted ROA. In contrast, the effect was the opposite after TSA, such that an increase in the NPLs ratio negatively impacted ROA. Such deterioration can be explained by a sharp rise in the NPLs ratio and other non-interest expenses that had impaired banks' profitability after TSA adoption. A detailed analysis is presented in subsequent paragraphs. For the case of foreign banks, the effect was not statistically significant in both periods (before and after TSA adoption). However, using financial statements analysis in table 4.9, there is reasonable evidence of a decline in ROA for both domestic and foreign banks after TSA adoption. For the case of foreign banks whose regression results are not statistically significant, we can conclude that TSA did not directly affect foreign banks' NPLs and profitability as a whole. Financial statement analysis shows that the NPLs ratio on foreign banks remained almost constant before and after TSA adoption. Foreign banks' NPLs was 8.08% before TSA and slightly increased to 8.36% after TSA, which is immaterial. The results partially reject the null hypothesis that bank

characteristics (NPLs) have no significant impact on bank performance before and after TSA adoption. Domestic banks had recorded statistically significant results in both periods (before and after TSA adoption), whereas foreign banks' results were not statistically significant. Generalized literature to back the above regression results is presented in subsequent paragraphs.

Regression results on domestic banks' ROE were consistent with ROA, only that the results were not statistically significant before TSA. However, after TSA adoption, the coefficient turned negative and statistically significant (-0.427, $p<0.01$). The above implies that a 1% increase in NPLs after TSA negatively impacted ROE by 0.427%. Such deterioration can be explained by a sharp rise in the NPLs ratio and other non-interest expenses that had impaired banks' profitability after TSA adoption. A detailed analysis is presented in subsequent paragraphs. For the case of foreign banks, the effect was negative and statistically significant (-0.366, $p<0.01$) before TSA, but the coefficient remained negative and statistically insignificant after TSA adoption. However, using financial statements analysis in table 4.9, there is reasonable evidence of a decline in ROE for both domestic and foreign banks after TSA adoption.

For the case of foreign banks whose regression results were not statistically significant after TSA, we can conclude that TSA did not directly affect foreign banks' NPLs and profitability as a whole. Financial statement analysis shows that the NPLs ratio on foreign banks remained almost constant before and after TSA adoption. Foreign banks' NPLs was 8.08% before TSA and slightly increased to 8.36% after TSA, which is immaterial. The results partially reject the null hypothesis that bank characteristics

(NPLs) have no significant impact on bank performance before and after TSA adoption. The study found that both domestic and foreign banks have recorded mixed results such that the results were statistically significant at one point, and the coefficient turned insignificant at another point, thus making it challenging to come up with a generalized conclusion. However, based on the financial analysis in table 4.9 the study found that, regardless of statistical significance, TSA came up with either a direct or indirect impact on bank performance, as evidenced by a general decline in bank performance. Generalized literature to back the above regression results is presented in subsequent paragraphs.

When performance is measured using NIM, the effects of the NPLs ratio on domestically-owned banks' NIM before and after TSA were not statistically significant. The above implies that NPLs and TSA have no significant impact on domestic banks' NIM. Financial statements analysis in table 4.9 confirms that domestic banks' NIM almost remained constant in both periods as the same was 5.23% before TSA and 5.02% after TSA. There was no significant difference between the two ratios; however, such a decline happened after the government wiped out its deposits from the commercial banking system, of which domestic banks were the primary beneficiaries. For the case of foreign banks, the effect was positive and statistically significant (0.213, $p<0.05$) before TSA implying that an increase in NPLs by 1% brought about an increase in NIM by 0.213%. It should be appreciated that the gross loans to total deposits ratio remained attractive during the period, causing banks' margins to grow. Therefore, though NPLs was also increasing, domestic banks still made an attractive interest income from loans.

In contrast, the results became statistically insignificant after TSA, meaning that TSA had not affected foreign banks' NIM. The above results are backed by the analysis of the financial statements in table 4.9, which shows a slight improvement in foreign banks' NIM from 3.60% to 3.94%. The above justifies that, even without TSA adoption, foreign banks' NIM would still increase. A detailed analysis is presented in subsequent paragraphs. However, using financial statements analysis in table 4.9, there is reasonable evidence of the stability of NIM for both domestic and foreign banks in both periods, before and after TSA adoption. The results partially reject the null hypothesis that bank characteristics (NPLs) have no significant impact on bank performance before and after TSA adoption. The study found that domestic and foreign banks have recorded diverse results such that at one point, the results were statistically significant, and the coefficient turned statistically insignificant at another point, thus making it difficult to come up with a generalized conclusion. However, based on the financial analysis in table 4.9 the study found that, regardless of statistical significance, TSA did not negatively impact the Net Interest Margin (NIM), as evidenced by the general stability of bank performance using NIM as a performance indicator. Generalized literature to back the above regression results is presented in subsequent paragraphs

(ii)   Relationship Between Gross Loans to Total Deposits and Banks' Financial Performance (ROA, ROE and NIM) using Domestic and Foreign Banks as Interaction Variables

- **Regression Results**

When performance is measured in terms of ROA, the effects of gross loans to total deposits ratio on domestic banks' ROA were not statistically significant in both periods (before and after TSA adoption). The above implies that, whether with TSA or not, ROA would still decline, as presented in table 4.9. A detailed analysis is presented in subsequent paragraphs. For the case of foreign banks, the effect was negative and statistically significant (–0.068, p<0.01) before TSA, implying that a 1% increase in gross loans to total deposit ratio decreased ROA by 0.068%, but the results turned statistically insignificant after TSA. However, using financial statements analysis in table 4.9, there is reasonable evidence of a decline in ROA for both domestic and foreign banks after TSA adoption. The results partially reject the null hypothesis that bank characteristics (Gross Loans to Total Deposits) have no significant impact on bank performance before and after TSA adoption. The study found that both domestic and foreign banks have recorded diverse results such that at one point, the results were statistically significant, and the coefficient turned statistically insignificant at another point, thus making it difficult to come up with a generalized conclusion. However, based on the financial analysis in Table 4.9 the study found that, regardless of statistical significance, TSA came up with either a direct or indirect impact on bank performance, as evidenced by a general decline in bank performance. Generalized literature to back the above regression results is presented in subsequent paragraphs.

When performance is measured in terms of ROE, the effects of gross loans to total deposits ratio on domestic banks' ROE were positive and statistically significant (0.123, <0.01) before TSA and the same turned negative and statistically significant (-0.15, <0.05) after TSA. The above implies that, before TSA, an increase in gross loans

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to total deposits ratio by 1% positively impacted ROE by 0.123%. However, after TSA, the effect was negative as the growth of gross loans resulted in an increase in NPLs that drained banks' profitability. Domestic banks' ROE had consequently declined from 5.54% to 1.18% after TSA, thus justifying the above negative relationship. For the case of foreign banks, the results were not statistically significant in both periods implying that, whether with TSA or not, ROE would still decline, as presented in table 4.9. A detailed analysis is presented in subsequent paragraphs. The results partially reject the null hypothesis that bank characteristics (Gross Loans to Total Deposits) have no significant impact on bank performance before and after TSA adoption. The study found that domestic and foreign banks have recorded diverse results such that at one point, the results were statistically significant, and the coefficient turned statistically insignificant at another point, thus making it difficult to come up with a generalized conclusion. However, based on the financial analysis results in Table 4.9 the study found that, regardless of statistical significance, TSA came up with either direct or indirect impact on bank performance as evidenced by a general decline in bank performance. Generalized literature to back the above regression results is presented in subsequent paragraphs.

When performance is measured in terms of NIM, the effects of gross loans to total deposits on domestic banks' NIM were positive and statistically significant (0.11, $p<0.05$) before TSA and the same remained positive and statistically significant (0.111, $p<0.01$) after TSA. The above results imply that an increase in NPLs by 1% increased NIM by the abovementioned coefficients. It should be appreciated that, during the two periods, the gross loans to total deposits ratio was still growing, causing

banks' margins to increase as well. For that reason, though NPLs was also growing, domestic banks were still making an attractive interest income from loans. For the case of foreign banks, the results were not statistically significant in both periods, implying that TSA has no significant impact on foreign banks' NIM. The above regression results are backed by the analysis of the financial statements in Table 4.9, which shows a slight improvement in foreign banks' NIM from 3.60% to 3.94%. The above result justifies that, even without TSA adoption, foreign banks' NIM would still increase. A detailed analysis is presented in subsequent paragraphs.

However, using financial statements analysis in Table 4.9, there is reasonable evidence of the stability of NIM for both domestic and foreign banks in both periods, before and after TSA adoption, regardless of the increase in gross loans to total deposits ratios. The results partially reject the null hypothesis that bank characteristics (Gross Loans to Total Deposits) have no significant impact on bank performance before and after TSA adoption. The study found that both domestic and foreign banks have recorded diverse results such that at one point, the results were statistically significant, and the coefficient turned statistically insignificant at another point, thus making it difficult to come up with a generalized conclusion. However, based on the financial analysis results in Table 4.9 the study found that, regardless of statistical significance, TSA did not affect banks' NIM, as evidenced by a general improvement in bank performance using NIM as a performance indicator. Generalized literature to back the above regression results is presented in subsequent paragraphs.

- **Generalized Literature Review to Back up the Above Regression Results**

The above results for ROA, ROE and NIM above have shown diverse relationships. The results show partially rejection and acceptance of the null hypothesis, which states that the influence of bank characteristics has no significant impact on bank performance before and after TSA. The study found that all performance indicators had varying relationships in both periods, such as failing to conclude the relationships between the abovementioned variables. It should be appreciated that a number of past studies came up with similar results. Therefore, based on their results, we can argue that there are no conclusive results about the relationships between independent and dependent variables. The results may differ in several ways. The study by ljughaiman and Salama (2019), Pillai, et al. (2017), and Victoria et al. (2018) integrated the agency and the institutional theory to explain bank performance in the MENA countries. The findings of the studies caution that, depending on the measurement criteria used for the analysis, it is imperative to identify whether it is the firms' specific governance structure or the ownership structure or characteristics that were used as independent variables to gauge its impact on firms' performance. Similar findings were found by Wanke et al. (2019). They concluded that earnings, financial position and financial soundness indicators depend upon various characteristics such as the type of banking institutions, the origin and bank ownership structure. However, some barriers such as cultural differences and regulatory factors may drive the result in a contrary direction. In light of the above, the present study concludes that TSA negatively impacted banks' performance. It should be appreciated that even those variables that were observed to be statistically insignificant were confirmed to have an indirect relationship between the variables and bank performance.

A good example is NPLs ratios which were in some instances recording statistically insignificant relationships; meanwhile, profitability ratios were declining. For that reason, we can generally conclude that, regardless of the statistical significance of some variables, TSA adoption came up with both a direct and an indirect negative influence on bank performance. However, based on almost all regression results above, there is reasonable evidence to conclude that TSA adoption did not primarily affect domestic and foreign banks' NIM.

- **The Summarized Trend of Gross Loans to Total Deposits and NPLs Ratios Against Banks' Financial Performance (ROA, ROE and NIM) for Domestic and Foreign Banks**

Table 4.9 shows that after TSA adoption, both ROA and ROE for domestic and foreign banks declined consistently with the average industrial ratio. Domestic banks' ROA declined from 0.88% to 0.62%, paralleled by a decline in foreign banks' ROA, whose ratio dropped from 0.87% to 0.59%. However, both domestic and foreign banks' ROA declined at a rate below the average industry ratio, where the ratio declined from 2.47% to 1.62% after TSA. For the case of ROE, Domestic banks' ratio declined from 5.54% to 1.18%, paralleled by a decline in foreign banks' ROE, whose ratio declined from 5.07% to 1.93%. The results show that the deterioration level was higher for domestic banks than for foreign ones.

Nevertheless, both domestic and foreign banks' deteriorations were above the industry average, whose ratio declined from 13.06% to 6.31%. As summarized in Table 4.17, domestic banks' gross loans to total deposits ratio increased from 64.89% to 78.86%, whereas foreign banks' ratio increased from 62.29% to 69.86%. In the same stance, an

increase in the gross loans to total deposits ratio came with an increase in the NPLs ratio for domestic and foreign banks. For domestic banks, NPLs rose from 6.45% to 13.29%, whereas foreign banks' ratio rose from 8.08% to 8.36%. The above results show a negative relationship between gross loans to total deposits and profitability (ROA and ROE). As banks increase credit accommodation, chances for bad and doubtful loans increase and eventually, NPLs and NPLs provisions may negatively affect banks' profitability.

Moreover, non-interest expenses increase in the course of managing loan portfolios and costs of recovering NPLs. The industry NPLs ratio rose from a single to double digits during the TSA period, bringing down the overall banking sector's profitability. As the gross loans to total deposits ratio increases, the chances for high NPLs also increase. Table 4.17 shows that as the gross loans to total deposits ratio increased from 66.15% before TSA to 77.52% after TSA, the NPLs ratio rose from 7.69% to 10.46% after TSA. There is a direct positive association between gross loans to total deposits and NPLs. As banks increase lending activities, chances for recruiting non-credit-worthy customers become high; thus, NPL's risk increases as well. As elaborated in the public notice issued by BOT in 2021, there were fraudulent activities committed by bank staff in giving loans to non-credit-worthy customers, such as bringing up the NPLs ratio. A review of the literature revealed mixed results regarding risk and performance. Ames et al. (2018) and Ellul and Yerramilli's (2013) study showed a positive risk and performance relationship.

Nevertheless, Ames et al. (2018) revealed that such a relationship transpires in the long and not in the short run. In addition, the study found that a strong risk committee has a direct positive impact on the effectiveness of the risk management practice. This is to say that conventional banking institutions' performance and risk-taking attitude have shown a positive association. In contrast, there was no evidence of a similar relationship between Islamic banks. In light of the above, it is worth a similar study to be carried out to check whether a risk-taking attitude has a positive relationship with performance. Based on the present study, it has been revealed that TSA and NPLs have generally come up with either direct or indirect impacts on banks' profitability ratios.

Table 4.9 shows that NIM for domestic banks slightly declined after TSA adoption, whereas foreign banks' ratio had slightly increased. Both the decrease and increase were at a minimal magnitude. The industry NIM had also declined at a minimal magnitude though the ratio was above the ones recorded by domestic and foreign banks. Domestic banks' NIM declined by 4% only from 5.23% to 5.02%, compared to a 9% increase for foreign banks, whose ratio increased from 3.60% to 3.94%, implying that foreign banks' NIM had improved though at a slightly higher magnitude as opposed to domestic banks which recorded a declined ratio. However, foreign and domestic banks' NIMs were still below the industry ratio. The industry ratio declined by 10%, from 7.71% to 6.92%. As summarized in Table 4.17, domestic banks' gross loans to total deposits ratio increased from 62.16% to 72.78%, whereas foreign banks' ratio increased from 62.29% to 69.86%. Based on the above results, there is reasonable evidence of a negative relationship between gross loans to total deposits and domestic banks' NIM, while the impact was contrariwise for foreign banks. As domestic banks'

NPLs increased by 106%, from 6.45% to 13.29% and because of the requirement that banks are required to suspend interest once the loan turns into NPLs, domestic banks had gone through this statutory requirement of suspending interests for all loans that had turned bad and doubtful. As such, the impact of suspension negatively affected domestic banks' NIM as interest income declined.

For the case of foreign banks, the results show that the ratio remained almost constant as NPLs was 8.08% before TSA and 8.36% after TSA. The above implies that NPLs did not significantly impair foreign banks' NIM compared to domestic banks. The present study is consistent with the study by Ames et al. (2018) and Ellul and Yerramilli (2013), who revealed a positive risk and performance relationship. A review of financial statements analysis had somehow revealed similar results for the banking sector as a whole, as the industry had experienced general stability of the Net Interest Margin (NIM), as evidenced in Table 4.9. Nevertheless, Ames et al. (2018) revealed that such a positive risk and performance relationship transpires in the long run and not in the very short run; hence what is still concealed here is the definition of a long run in the context of bank performance. In addition, the study found that a strong risk committee has a direct positive impact on the effectiveness of the risk management practice. This is to say that conventional banking institutions' performance and risk-taking attitude have shown a positive association, whereas there was no evidence of a similar relationship for Islamic banks. Based on the above arguments, it is imperative to carry out a similar study after some time to check the long-run impact of risk and performance.

(iii)   Relationship Between NPLs and Banks' Financial Performance (ROA, ROE and NIM) using Private and State-Owned Banks as Interaction Variables

- **Regression Results**

When performance is measured in terms of ROA, the effect of the NPLs ratio on private banks' ROA before TSA was negative and statistically significant (–0.051, $p<0.01$) and became statistically insignificant after TSA. The above implies that a 1% increase in NPLs before TSA negatively impacted ROA by 0.051%. However, the effect was not statistically significant after TSA. On the other hand, financial statements analysis in Table 4.9 shows that private banks' ROA declined from 0.89% to 0.55% after TSA, meaning that whether with TSA adoption or not, the ratio would still fall. Such deterioration can be explained by a sharp rise in other non-interest expenses, including NPLs, thus impairing banks' profitability after TSA adoption. Though regression results show that the relation between NPLs and ROA was not statistically significant, the study found the presence of an indirect relationship between NPLs and ROA. As highlighted above, apart from NPLs, the banking sector was characterized by an increase in non-interest expenses, affecting their profitability. Moreover, during this period, lending to the private sector was very down due to banks' reluctance to lend to the private sector as the NPLs ratio grew in the entire banking sector. Many businesses were closing down operations, affecting banks' business at large. Several banks had retrenched their employees to minimise operating costs, and some even closed down some of their bank branches. The government had also shifted its attention from meeting recurring expenditures to capital expenditures, affecting money circulation in the economy. A detailed analysis is presented in subsequent paragraphs. For the case of state-owned banks, the effect was positive and

statistically significant (0.062, p<0.05) before TSA, and the coefficient turned negative and statistically significant (–0.126, p<0.01) after TSA. As reflected by regression coefficients, NPLs had positively impacted ROA before TSA because, during the period, NPLs ratio was low, and the same was at a single digit (7.34%).

Moreover, during this time, banks were leveraging on government deposits and were not struggling to mobilize deposits from the general public, thus leveraging on low funding costs. However, after TSA, there was a sharp rise in NPLs and non-interest expenses to the tune of deteriorating banks' profitability. State-owned banks' NPL rose from 7.34% before TSA to 10.94% after TSA. Consequently, state-owned banks' ROA declined from 0.54% to 0.39%, thus justifying the negative regression coefficient after TSA adoption. The results partially reject the null hypothesis that bank characteristics (NPL) have no significant impact on bank performance before and after TSA adoption. The study found that private and state-owned banks have recorded mixed results such that at one point, the results were statistically significant and, at some other point, statistically insignificant, thus making it difficult to come up with a generalized conclusion. However, based on the financial analysis results in Table 4.9 the study found that, regardless of statistical significance, TSA came up with either direct or indirect impact on bank performance as evidenced by a general decline in bank performance. Generalized literature to back the above regression results is presented in subsequent paragraphs.

Regression results on private banks' ROE recorded consistent results with ROA, such that the effect of NPL ratio on private banks' ROE was negative and statistically

significant (–0.209, p<0.1) before TSA and became statistically insignificant after TSA. The above implies that a 1% increase in NPL before TSA negatively impacted ROE by 0.209%; however, the effect was not statistically significant after TSA. Nevertheless, just as good as for the case of ROA above, the study found that financial statements analysis in Table 4.9 shows that private banks' ROE declined from 4.44% to 0.97% after TSA meaning that whether with TSA adoption or not, the ratio would still fall. Such deterioration can be explained by a sharp rise in other non-interest expenses, including NPL, thus impairing banks' profitability after TSA adoption. In the same vein as for the case of ROA above, the study found that, though regression results recorded an insignificant relationship between NPL and ROE, the study found an indirect relationship between NPL and ROE. As highlighted above, apart from NPLs, the banking sector was characterized by an increase in non-interest expenses, thus affecting their profitability.

Moreover, during this period, lending to the private sector was very down due to banks' reluctance to lend to the private sector as the NPLs ratio grew in the entire banking sector. Many businesses were closing down operations, thus affecting banks' business at large. Several banks had retrenched their employees to minimise operating costs, and some even closed down some of their bank branches. The government had also shifted its attention from meeting recurring expenditures to capital expenditures, thus affecting money circulation in the economy. For the case of state-owned banks, the effects were not statistically significant in both periods, meaning that based on statistical results, TSA had not impacted state-owned banks' ROE. A review of the financial statements analysis in Table 4.9 revealed a slight improvement in state-

owned banks' ROE from 1.08% to 2.22% after TSA. The increase in state-owned banks' ROE could be due to the merger of three state-owned banks in 2018 that resulted in such an improvement. During this time, Tanzania Postal Bank, Tanzania Women's Bank and Twiga Bancorp merged to form one giant bank, Tanzania Commercial Bank. It should be appreciated that, though statistical results revealed the absence of a significant relationship, there is a strong reason to conclude that TSA had indirectly negatively impacted state-owned banks' performance. The merger of the banks above resulted from the failure of two state-owned banks (Twiga Bancorp and Tanzania Women's Bank) after TSA. Besides the merger during the period, the government had also injected capital to rescue the position. It should be appreciated that state-owned banks would have faced a severe disaster without the measures mentioned above.

Moreover, the increase in state-owned banks' NPL ratio from 7.34% to 10.94% after TSA provides reasonable evidence that NPL might have directly or indirectly affected state-owned banks' performance. The results partially reject the null hypothesis that bank characteristics (NPL) have no significant impact on bank performance before and after TSA adoption. The study found that private and state-owned banks have recorded mixed results such that at one point, the results were statistically significant and, at some other point, statistically insignificant, thus making it difficult to come up with a generalized conclusion. However, based on the financial analysis results in Table 4.9 the study found that, regardless of statistical significance, TSA came up with either direct or indirect impact on bank performance as evidenced by a general decline in

bank performance. Generalized literature to back the above regression results is presented in subsequent paragraphs.

When performance is measured in terms of NIM, the effects of the NPL ratio on both private and domestic banks' NIM before and after TSA were not statistically significant, implying that TSA has no significant impact on the two banks' NIM. A review of financial statements analysis in Table 4.9 revealed that private banks' NIM increased from 4.33% to 4.84% compared to state-owned banks, whose ratio slightly declined from 4.93% to 3.86% after TSA. There was no significant difference between the two ratios; however, a decline in state-owned banks' NIM happened after the government wiped out its deposits from the commercial banking system, of which state-owned banks were the primary beneficiaries. In light of the above, the study concludes the presence of an indirect relationship between TSA, NPL and state-owned banks' NIM. For the case of private banks, the increase in NIM had happened because, during the period, the gross loans to total deposits ratio was still increasing, causing banks' margins to grow as well. For that reason, though NPL was also increasing, private banks still made attractive interest income from loans. The above results are backed by the analysis of the financial statements in Table 4.9. A detailed financial analysis is presented in subsequent paragraphs. The results partially reject the null hypothesis that bank characteristics (NPL) have no significant impact on bank performance before and after TSA adoption. The study found that private and state-owned banks have recorded mixed results such that at one point, the results were statistically significant and, at some other point, statistically insignificant, thus making it difficult to come up with a generalized conclusion. However, based on the financial

analysis results in Table 4.9 the study found that, regardless of statistical significance, TSA did not significantly affect bank performance using NIM as a performance indicator, as evidenced by the general stability of bank performance. Generalized literature to back the above regression results is presented in subsequent paragraphs.

(iv)   Relationship Between Gross Loans to Total Deposits and Banks' Financial Performance (ROA, ROE and NIM) using Private and State-Owned Banks as Interaction Variables

- **Regression Results**

When performance is measured in terms of ROA, the effects of gross loans to total deposits ratio on private banks' ROA were not statistically significant in both periods (before and after TSA adoption). The above implies that, whether with TSA or not, ROA would still decline, as presented in Table 4.9. Moreover, a detailed analysis is presented in subsequent paragraphs. For the case of state-owned banks, the effect was not statistically significant before TSA, but the coefficient turned negative and statistically significant (-0.035, $p<0.1$) after TSA implying a 1% increase in gross loans to total deposit ratio, decreased ROA by 0.035%. In the same stance, the analysis of the financial statements in Table 4.9 provides reasonable evidence of a decline in ROA for the state-owned banks. Moreover, though the effect of gross loans on total deposits was not statistically significant, financial statements analysis has proved the presence of an indirect negative relationship between gross loans to total deposits and ROA after TSA. Private banks' ROA declined from 0.89% to 0.55% after TSA adoption as summarized in subsequent paragraphs. The results partially reject the null hypothesis that the influence of bank characteristics (gross loans to total deposits) has no significant impact on bank performance before and after TSA adoption. The study

found that private and state-owned banks have recorded mixed results such that at one point, the results were statistically significant and, at some other point, statistically insignificant, thus making it difficult to come up with a generalized conclusion. However, based on the financial analysis results in Table 4.9 the study found that, regardless of statistical significance, TSA came up with either direct or indirect impact on bank performance as evidenced by a general decline in bank performance. Generalized literature to back the above regression results is presented in subsequent paragraphs.

When performance is measured in terms of ROE, the effects of gross loans to total deposits ratio on private banks' ROE were not statistically significant in both periods (before and after TSA adoption). For the case of state-owned banks, the effect was positive and statistically significant (0.199, p<0.05) before TSA, and the coefficient turned negative and statistically significant after TSA. The above implies that the period before TSA's increase in gross loans to total deposits positively impacted ROE such that as gross loans increased, ROE increased as well. However, after TSA, the increase in gross loans came with an increase in NPLs that had decelerated the growth of state-owned banks' ROE. A review of the financial statements analysis in Table 4.9 revealed a slight improvement in state-owned banks' ROE from 1.08% to 2.22% after TSA. The increase in state-owned banks' ROE could be due to a merger of three state-owned banks in 2018 that resulted in such an improvement. If it was not for a merger and the government's efforts to inject more capital, ROE could have declined significantly. As highlighted in previous subsections, it was during this period when Tanzania Postal Bank, Tanzania Women's Bank and Twiga Bancorp merged to form

one giant bank, Tanzania Commercial Bank. Besides the merger during the period, the government had also injected capital to rescue the position.

It should be appreciated that, without the measures above, state-owned banks would have faced a severe disaster. A detailed analysis is presented in subsequent paragraphs. The results partially reject the null hypothesis that the influence of bank characteristics (gross loans to total deposits) has no significant impact on bank performance before and after TSA adoption. The study found that private and state-owned banks have recorded mixed results such that at one point, the results were statistically significant and, at some other point, statistically insignificant, thus making it difficult to come up with a generalized conclusion. However, based on the financial analysis results in Table 4.9 the study found that, regardless of statistical significance, TSA came up with either direct or indirect impact on bank performance as evidenced by a general decline in bank performance. Generalized literature to back the above regression results is presented in subsequent paragraphs.

When performance is measured in terms of NIM, the effects of gross loans to total deposits ratio on private banks' NIM before and after TSA were not statistically significant, implying that TSA has no significant impact on the two banks' NIM. A review of financial statements analysis in Table 4.9 revealed that private banks' NIM increased from 4.33% to 4.84%. There was no significant difference between the two ratios, meaning that private banks would not have shaken much with TSA or without TSA. The above goes with the vein that private banks were not the primary beneficiaries of government deposits; thus, the withdrawal of government deposits did

not significantly impact private banks' NIM. For the case of state-owned banks, the effect was positive and statistically significant (0.168, p<0.1) before TSA and became statistically insignificant afterwards. The above results imply that an increase in gross loans to total deposits ratio by 1% before TSA positively impacted NIM by 0.168%.

It should be appreciated that, during the pre-TSA periods, the gross loans to total deposits ratio was still increasing, causing state-owned banks' margins to grow as well. However, after TSA adoption, state-owned banks' NIM declined from 4.93% to 3.86%. Such a decline happened after the government wiped out its deposits from the commercial banking system, of which state-owned banks were the primary beneficiaries. In light of the above, though regression results recorded an insignificant relationship, the study finds the presence of an indirect relationship between TSA, gross loans to total deposits and state-owned banks' NIM. A detailed analysis is presented in subsequent paragraphs. The results partially reject the null hypothesis that the influence of bank characteristics (gross loans to total deposits) has no significant impact on bank performance before and after TSA adoption. The study found that private and state-owned banks have recorded mixed results such that at one point, the results were statistically significant and, at some other point, statistically insignificant, thus making it difficult to come up with a generalized conclusion. However, based on the financial analysis results in Table 4.9 the study found that, regardless of statistical significance, TSA did not affect bank performance, as evidenced by the general stability of bank performance using NIM as a performance indicator. Generalized literature to back the above regression results is presented in subsequent paragraphs.

- **A Generalized Literature Review to Back up the Above Regression Results**

As for the case of NPLs, the above results on the influence of gross loans to total deposits for ROA, ROE and NIM in roman (i) to (iii) above had shown diverse relationships. The results show partial rejection and acceptance of the null hypothesis, which states that the influence of bank characteristics has no significant impact on bank performance before and after TSA. The study found that all performance indicators had varying relationships in both periods, such as failing to conclude the relationships between the abovementioned variables. It should be appreciated that several past studies came up with similar results. Therefore, based on their results, we can argue that there are no conclusive results about the relationships between independent and dependent variables. The results may differ in several ways. The study by Aljughaiman and Salama (2019), Pillai, et al. (2017), and Victoria et al. (2018) integrated the agency and the institutional theory to explain bank performance in the MENA countries. The findings of the studies caution that, depending on the measurement criteria used for the analysis, it is imperative to identify whether the firms' specific governance structure or the ownership structure or characteristics are used as independent variables to gauge their impact on firms' performance. Similar findings were found by Wanke et al. (2019). They concluded that earnings, financial position and financial soundness indicators depend upon various characteristics such as the type of banking institutions, the origin and bank ownership structure. However, some barriers such as cultural differences and regulatory factors may drive the result in a contrary direction. In light of the above, the present study concludes that TSA negatively impacted banks' performance. It should be appreciated that even those

variables that were observed to be statistically insignificant were confirmed to have an indirect relationship between the variables and bank performance.

A good example is NPL ratios which were in some instances recording statistically insignificant relationships; meanwhile, profitability ratios were declining. For that reason, we can generally conclude that, regardless of the statistical significance of some variables, TSA adoption came up with both a direct and an indirect negative influence on bank performance. However, based on almost all regression results above, there is reasonable evidence to conclude that TSA adoption did not primarily affect private and small banks' NIM.

- **The Summarized Trend of Gross Loans to Total Deposits and NPL Ratios Against Banks' Financial Performance (ROA, ROE and NIM) for Private and State-Owned Banks**

Table 4.9 shows that after TSA adoption, except for state-owned ROE, both ROA and ROE for private and state-owned banks declined consistently with the average industrial ratio. Private banks' ROA declined by 38% from 0.89% to 0.55%, compared to a 28% decline for state-owned banks whose ROA dropped from 0.54% to 0.39%, implying that private banks' ROA deteriorated slightly higher magnitude than state-owned banks. However, private banks ROA declined at a rate slightly above the industry average ROA, whereas state-owned banks were within the industry average limit. The industry ratio declined by 34%, from 2.47% to 1.62%. For the case of ROE, private banks' ratio declined by 78%, from 4.44% to 0.97%, compared to a 106% increase from 1.08% to 2.22% for state-owned banks. The results show that the level of deterioration was high for private banks while state-owned banks' performance

moved contrariwise as ROE increased after TSA. Private banks' ROE deterioration was above the industry average. The industry ratio shows a decline of ROE by 54%, from 13.06% to 6.31%. As summarized in Table 4.17, private banks gross loans to total deposits ratio increased from 72.91% to 73.99%, whereas state-owned banks' ratio increased from 59.52% to 76.73%. In the same vein increase in the gross loans to total deposits ratio came with an increase in the NPLs ratio for both private and state-owned banks. For private banks, NPL rose from 6.45% to 13.29%, whereas state-owned banks' ratio rose from 8.08% to 8.36%. Based on the above results, there is reasonable evidence to conclude a negative relationship between gross loans to total deposits and profitability (ROA and ROE). It is imperative to note that, as banks increase credit accommodation, chances for bad and doubtful loans increase. Eventually, NPLs and NPL provisions may negatively affect banks' profitability.

Moreover, non-interest expenses increase in the course of managing loan portfolios and costs of recovering NPLs. As discussed in the previous sections, the present study is inconsistent with the study by Ames et al. (2018) and Ellul and Yerramilli (2013), who revealed a positive risk and performance relationship. A review of financial statements analysis revealed a general decline in the sector's ROA and ROE, as evidenced in Table 4.9. Nevertheless, Ames et al. (2018) demonstrated that such a positive risk and performance relationship transpires in the long run and not in the very short run; hence what is still concealed here is the definition of a long run in the context of bank performance. In addition, the study found that a strong risk committee has a direct positive impact on the effectiveness of the risk management practice. This is to say that, conventional banking institutions' performance and their risk-taking attitude

have shown a positive association. In contrast, there was no evidence of a similar relationship between Islamic banks. Based on the above arguments, it is therefore imperative to carry out a similar study after some time to check the long-run impact of risk and performance.

Table 4.9 shows that NIM for private banks had increased after TSA adoption, whereas state-owned banks' ratio had slightly declined. Both the increase and decrease were of a small magnitude. The industry NIM had also declined at a minimal magnitude though the ratio was above the ones recorded by private and state-owned banks. Private banks' NIM increased by 12%, from 4.33% to 4.82%, compared to a 22% decrease for state-owned banks, whose ratio declined from 4.93% to 3.86%, implying that state-owned banks' NIM had deteriorated though at a small magnitude as opposed to private banks which recorded an improved ratio. However, domestic and state-owned banks' NIMs were still below the industry ratio. The industry ratio declined by 10%, from 7.71% to 6.92%. As summarized in Table 4.17, private banks gross loans to total deposits ratio increased from 72.91% to 73.99%, whereas state-owned banks' ratio increased from 59.52% to 76.73%. The above results show reasonable evidence of the negative relationship between gross loans to total deposits and state-owned banks' NIM.

In contrast, for the case of private banks, the impact was contrariwise because state-owned banks' NPL increased by 115%, from 5.64% to 12.15%. In light of the preceding requirement that banks are required to suspend interest once the loan turns into NPL, state-owned banks had gone through this statutory requirement of suspending interest for all loans that had turned into NPL. The impact negatively

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affected state-owned banks' NIM as interest income declined. For the case of private banks, the results show that the ratio remained almost constant as NPL was 5.89% before TSA and 10.72% after TSA. This implies that NPLs did not significantly impair private banks' NIM compared to state-owned banks. As discussed in the previous sections, the present study is consistent with the study by Ames et al. (2018) and Ellul and Yerramilli (2013), who revealed a positive risk and performance relationship. A review of financial statements analysis had somehow revealed similar results for the banking sector as a whole, as the industry had experienced general stability of the Net Interest Margin (NIM), as evidenced in table 4.9. Nevertheless, Ames et al. (2018) revealed that such a positive risk and performance relationship transpires in the long run and not in the very short run; hence what is still concealed here is the definition of a long run in the context of bank performance. In addition, the study found that a strong risk committee has a direct positive impact on the effectiveness of the risk management practice. This is to say that, conventional banking institutions' performance and their risk-taking attitude have shown a positive association. In contrast, there was no evidence of a similar relationship between Islamic banks. Based on the above arguments, it is therefore imperative to carry out a similar study after some time to check the long-run impact of risk and performance.

b) **Relationship Between Bank Risks (NPLs and Gross Loans to Total Deposits Ratio) on Banks' Financial Performance (ROA, ROE and NIM) using Large and Small Banks as Interaction Variables**

As highlighted in previous subsections, this subsection presents results in four parts. The first part discusses the influence of NPL on bank performance, whereas the second part focuses on the influence of gross loans to total deposits on bank performance. The

third aspect covers the overall literature to back up the findings in parts one and two. These risk indicators (NPL and gross loans to total deposits) share similar characteristics. Several studies have discussed bank risks as a whole by covering both credit and liquidity risks as key risk indicators. This study has examined generalized literature covering credit and liquidity risks using NPL and gross loans to total deposit ratios as proxies for credit and liquidity risk, respectively. The study applied this approach to avoid the repetition of similar literature on each risk indicator. As highlighted above, large and small banks were used as interaction variables to check the influence of these bank-specific characteristics (NPLs and gross loans to total deposits) on bank performance. Lastly, the fourth part discusses financial analysis results by showing trends of both large and small banks' performance paralleled with NPLs and gross loans to total deposit ratios. This part provides a detailed financial performance analysis before and after TSA adoption.

(i)   Relationship Between NPLs and Banks' Financial Performance (ROA, ROE and NIM) using Large and Small Banks as Interaction Variables
- **Regression Results**

When performance is measured in terms of ROA, the effect of the NPL ratio on large banks' ROA before TSA was negative and statistically significant (–0.09, $p<0.01$) and became statistically insignificant after TSA. The above implies that a 1% increase in NPL before TSA negatively impacted ROA by 0.09%; however, the effect was not statistically significant after TSA. Nevertheless, financial statements analysis in table 4.14 shows that large banks' ROA declined from 1.73% to 1.18% after TSA, meaning that whether with TSA adoption or not, the ratio would still fall. Such a deterioration can be explained by a sharp rise in other non-interest expenses, including NPL, thus

impairing banks' profitability after TSA adoption. Though regression results show that the relation between NPL and ROA was not statistically significant, the study found the presence of an indirect relationship between NPL and ROA. As highlighted above, apart from NPLs, the banking industry was characterized by an increase in non-interest expenses, thus affecting their profitability.

Moreover, during this period, lending to the private sector was very down due to banks' reluctance to lend to the private sector as the NPLs ratio grew in the entire banking sector. Many businesses were closing down operations, affecting the banking business at large. Consequently, many banks retrenched their employees to minimise operating costs, and some even closed down some of their bank branches. The government had also shifted its attention from meeting recurring expenditures to capital expenditures, thus affecting money circulation in the economy. A detailed analysis is presented in subsequent paragraphs. For the case of small banks, the effect was not statistically significant before and after TSA adoption, meaning that, whether with TSA or not, ROA would still decline, as evidenced in Table 4.14 in the previous sections above. The table shows a decline in small banks' ROA from 3.27% to 2.06%, paralleled with a sharp increase of NPL from 5.64% to 12.15% after TSA. The above shows that even though regression results are not statistically significant, there is an indirect relationship between NPL and small banks' ROA. The results partially reject the null hypothesis that bank characteristics (NPL) have no significant impact on bank performance before and after TSA adoption. The study found that both large and small have recorded mixed results such that at one point, the results were statistically significant and, at some other point, statistically insignificant, thus making it difficult

to come up with a generalized conclusion. However, based on the financial analysis in table 4.9 the study found that, regardless of statistical significance, TSA came up with either direct or indirect impact on bank performance, as evidenced by a general decline in bank performance. Generalized literature to back the above regression results is presented in subsequent paragraphs.

Regression results on large banks' ROE recorded consistent results with ROA, such that the effect of NPL ratio on large banks' ROE was negative and statistically significant (–0.574, p<0.1) before TSA and became statistically insignificant after TSA. The above implies that a 1% increase in NPL before TSA negatively impacted ROE by 0.574%; however, the effect was not statistically significant afterwards. Nevertheless, just as good as for the case of ROA above, the study found that financial statements analysis in table 4.14 shows that large banks' ROE declined from 9.48% to 4.66% after TSA meaning that whether with TSA adoption or not, the ratio would still fall. Such deterioration can be explained by a sharp rise in other non-interest expenses, including NPL, thus impairing banks' profitability after TSA adoption. In the same vein as for the case of ROA above, the study found that, though regression results recorded an insignificant relationship between NPL and ROE, the study found an indirect relationship between NPL and ROE. As highlighted above, apart from NPLs, almost all banks' were characterized by an increase in non-interest expenses, thus affecting their profitability.

Moreover, during this period, lending to the private sector was very down due to banks' reluctance to lend to the private sector as the NPLs ratio grew in the entire

banking sector. Many businesses were closing down operations, thus affecting banks' business. Several banks had retrenched their employees to minimise operating costs, and some went as far as to close down some of their bank branches. The government had also shifted its attention from meeting recurring expenditures to capital expenditures, thus affecting money circulation in the economy. For the case of small banks, the effects were not statistically significant in both periods, meaning that based on statistical results, TSA had not impacted small banks' ROE. A review of the financial statements analysis in Table 4.14 revealed a slight decline in small banks' ROE from 14.13% to 6.23% after TSA. It should be appreciated that, though statistical results showed the absence of a significant relationship, there is a strong reason to conclude that TSA had indirectly negatively impacted small banks' performance.

Moreover, the increase in small banks' NPL ratio from 5.64% to 12.15% after TSA provides reasonable evidence that NPL might have directly or indirectly affected small banks' performance. The results partially reject the null hypothesis that bank characteristics (NPL) have no significant impact on bank performance before and after TSA adoption. The study found that both large and small banks have recorded mixed results such that at one point, the results were statistically significant and, at some other point, statistically insignificant, thus making it challenging to come up with a generalized conclusion. However, based on the financial analysis in Table 4.9 the study found that, regardless of statistical significance, TSA came up with either a direct or indirect impact on bank performance, as evidenced by a general decline in bank performance. Generalized literature to back the above regression results is presented in subsequent paragraphs.

When performance is measured in terms of NIM, the effects of the NPL ratio on both large and small banks' NIM before and after TSA were not statistically significant, implying that TSA has no significant impact on the two banks' NIM. The financial statement analysis in Table 4.14 revealed that large banks' NIM increased from 3.57% to 3.73% compared to small banks' NIM, whose ratio remained almost constant. The ratio was 13.26% before TSA, and 12.82% say 13% after TSA. There was no significant difference between the two ratios; however, a slight decline in small banks' NIM happened after the government wiped out its deposits from the commercial banking system. Small banks are mainly state-owned banks, one of the primary beneficiaries of government deposits. In light of the above, the study concludes the presence of an indirect relationship between TSA, NPL and small banks' NIM. For the case of large banks, the increase in NIM happened because, during the period, the gross loans to total deposits ratio was still increasing, causing banks' margins to grow. For that reason, though NPL was also increasing, large banks were still making an attractive interest income from loans. The above results are backed by the analysis of the financial statements in Table 4.14. A detailed financial analysis is presented in subsequent paragraphs. The results partially reject the null hypothesis that bank characteristics (NPL) have no significant impact on bank performance before and after TSA adoption. The study found that both large and small banks have recorded mixed results such that at one point, the results were statistically significant and, at some other point, statistically insignificant, thus making it difficult to come up with a generalized conclusion. However, based on the financial analysis results in Table 4.9 the study found that, regardless of statistical significance, TSA did not affect bank performance as evidenced by a general stability of bank performance using NIM as a performance

indicator. A generalized literature to back the above regression results is presented in subsequent paragraphs.

(ii)   Relationship Between Gross Loans to Total Deposits and Banks' Financial Performance (ROA, ROE and NIM) using Large and Small Banks as Interaction Variables
- **Regression Results**

When performance is measured in terms of ROA, the effects of gross loans to total deposits ratio on both large and small banks' ROA were not statistically significant in both periods (before and after TSA adoption). The above implies that, whether with TSA or not, ROA would still decline, as presented in Table 4.14. Moreover, a detailed analysis is presented in subsequent paragraphs. However, a review of the financial statements analysis in Table 4.14 provides reasonable evidence of a decline in ROA for both large and small banks. The study found that, though the effect of gross loans to total deposits ratio was not statistically significant, financial statements analysis revealed the presence of an indirectly negative relationship between gross loans to total deposits and ROA. The results partially reject the null hypothesis that the influence of bank characteristics (gross loans to total deposits) has no significant impact on bank performance before and after TSA adoption. The study found that both large and small have recorded mixed results such that at one point, the results were statistically significant and, at some other point, statistically insignificant, thus making it difficult to come up with a generalized conclusion. However, based on the financial analysis results in Table 4.14 the study found that, regardless of statistical significance, TSA came up with either direct or indirect impact on bank performance as evidenced by a

general decline in bank performance. Generalized literature to back the above regression results is presented in subsequent paragraphs.

When performance is measured in terms of ROE, the effects of gross loans to total deposits ratio on large and small banks' ROE were not statistically significant in both periods (before and after TSA adoption. However, table 4.14 shows a decline in both large and small banks' ROE after TSA adoption. Large banks ROE declined from 9.48% to 4.66% after TSA, whereas small banks' ratio decreased from 14.13% to 6.23% after TSA. It should be appreciated that the increase in gross loans came with an increase in NPLs that had deteriorated the banking sector's performance. It was revealed that, though the effect of gross loans to total deposits ratio was not statistically significant, financial statements analysis revealed the presence of an indirectly negative relationship between gross loans to total deposits and ROA after TSA. A detailed analysis is presented in subsequent paragraphs. The results partially reject the null hypothesis that the influence of bank characteristics (gross loans to total deposits) has no significant impact on bank performance before and after TSA adoption. The study found that both large and small banks have recorded mixed results such that at one point, the results were statistically significant and, at some other point, statistically insignificant, thus making it difficult to come up with a generalized conclusion. However, based on the financial analysis in Table 4.14 the study found that, regardless of statistical significance, TSA came up with either direct or indirect impact on bank performance as evidenced by a general decline in bank performance. Generalized literature to back the above regression results is presented in subsequent paragraphs.

When performance is measured in terms of NIM, the effects of gross loans to total deposits ratio on both large and small banks' NIM were positive and statistically significant before TSA and became statistically insignificant after TSA. For the case of the large bank, the coefficient was significant by (0.08, p<0.01), whereas for small banks, the coefficient was significant by (0.88, p<0.1) before TSA. The above implies that, before TSA, an increase in gross loans to total deposits positively impacted NIM. During this period, the sector was booming, and the lending business was running as usual because banks were not facing liquidity problems. Moreover, NPLs were still at single digits for both large and small banks, thus bringing confidence for banks to lend without hesitance. However, after TSA adoption, the results for both large and small banks turned out to be statistically insignificant, implying that TSA had not impacted banks' NIM. A review of financial statements in Table 4.14 shows no significant difference between large and small banks before and after TSA adoption. Large banks' NIM had slightly increased from 3.57% to 3.73%, whereas small banks' ratio slightly declined from 13.26% to 12.82%, say 13%. The results revealed that TSA had not affected large and small banks' NIM, as presented in Table 4.14. A detailed analysis is presented in subsequent paragraphs. The results partially reject the null hypothesis that the influence of bank characteristics (gross loans to total deposits) has no significant impact on bank performance before and after TSA adoption. The study found that both large and small banks have recorded mixed results such that at one point, the results were statistically significant and, at some other point, statistically insignificant, thus making it difficult to come up with a generalized conclusion. However, based on the financial analysis in Table 4.14 the study found that, regardless of statistical significance, TSA did not affect bank performance, as evidenced by the

general stability of bank performance using NIM as a performance indicator. Generalized literature to back the above regression results is presented in subsequent paragraphs.

- **A Generalized Literature Review to Back up the Above Regression Results**

As for the case of NPLs, the above results on the influence of gross loans to total deposits for ROA, ROE and NIM above had shown diverse relationships. The results show partial rejection and acceptance of the null hypothesis, which states that the influence of bank characteristics has no significant impact on bank performance before and after TSA. The study found that all performance indicators had varying relationships in both periods, such as failing to conclude the relationships between the abovementioned variables. It should be appreciated that several past studies came up with similar results. Therefore, based on their results, we can argue that there are no conclusive results about the relationships between independent and dependent variables. The results may differ in several ways. The study by Aljughaiman and Salama (2019), Pillai, et al. (2017), and Victoria et al. (2018) integrated the agency and the institutional theory to explain bank performance in the MENA countries. The findings of the studies caution that, depending on the measurement criteria used for the analysis, it is imperative to identify whether it is the firms' specific governance structure or the ownership structure or characteristics that were used as independent variables to gauge its impact on firms' performance. Similar findings were found by Wanke et al. (2019). They concluded that earnings, financial position and financial soundness indicators depend upon various characteristics such as the type of banking institutions, the origin and bank ownership structure. However, some barriers such as

cultural differences and regulatory factors may drive the result in a contrary direction. In light of the above, the present study concludes that TSA negatively impacted banks' performance. It should be appreciated that even those variables that were observed to be statistically insignificant were confirmed to have an indirect relationship between the said variables and bank performance.

A good example is NPL ratios which were in some instances recording statistically insignificant relationships; meanwhile, profitability ratios were declining. For that reason, we can generally conclude that, regardless of the statistical significance of some variables, TSA adoption came up with both a direct and an indirect negative influence on bank performance. However, based on almost all regression results above, there is reasonable evidence to conclude that TSA adoption did not primarily affect large and small banks' NIM.

- **The Summarized Trend of Gross Loans to Total Deposits and NPL Ratios Against Banks' Financial Performance (ROA, ROE and NIM) for Large and Small Banks**

Table 4.14 shows that after TSA adoption, ROA and ROE for large and small banks declined consistently with the average industrial ratio. Large banks' ROA declined by 32%, from 1.73% to 1.18%, compared to a 37% decline for small banks, whose ratio dropped from 3.27% to 2.06%, implying that small banks' ROA deteriorated at a slightly higher magnitude than large banks. However, large banks' ROA declined below the industry average ROA. The industry ratio declined by 34%, from 2.47% to 1.62%. For the case of ROE, large banks' ratio declined by 51%, from 9.48% to 4.66%, compared to a 56% decrease from 5.07% to 1.93% for small banks. The results show

that the deterioration level was higher for small banks than for large ones. Small banks' deterioration was above the industry average. The industry ratio shows a decline of ROE by 52%, from 13.06% to 6.31%. As summarized in Table 4.17, large banks' gross loans to total deposits ratio increased from 62.16% to 72.78%, whereas small banks increased from 70.13% to 82.26%. In the same vein increase in the gross loans to total deposits ratio came with an increase in the NPLs ratio for small banks though for large banks NPL ratio almost remained constant as the same has recorded a slight decline. For large banks, NPL slightly declined from 7.14% to 6.98%, whereas small banks' ratio rose from 5.64% to 12.15%.

Based on the above results, there is reasonable evidence of a negative relationship between gross loans to total deposits and profitability (ROA and ROE). As banks increase credit accommodation, chances for bad and doubtful loans increase and eventually, NPLs and NPL provisions may negatively affect banks' profitability. Moreover, non-interest expenses increase in the course of managing loan portfolios and costs of recovering NPLs. As discussed in the previous sections, the present study is inconsistent with the study by Ames et al. (2018) and Ellul and Yerramilli (2013), who revealed a positive risk and performance relationship. A review of financial statements analysis revealed a general decline in the sector's ROA and ROE, as evidenced in Table 4.9. Nevertheless, Ames et al. (2018) showed that such a positive risk and performance relationship transpires in the long run and not in the very short run; hence what is still concealed here is the definition of a long run in the context of bank performance. In addition, the study found that a strong risk committee has a direct positive impact on the effectiveness of the risk management practice. This is to say

that, conventional banking institutions' performance and their risk-taking attitude have shown a positive association. In contrast, there was no evidence of a similar relationship between Islamic banks. Based on the above arguments, it is therefore imperative to carry out a similar study after some time to check the long-run impact of risk and performance.

Table 4.14 shows that NIM for small banks slightly declined after TSA adoption, whereas large banks' ratio had slightly increased. However, both the decrease and increase were of a minimum magnitude. The industry NIM had also declined at a minimal magnitude though the ratio was above the ones recorded by large banks. Small banks' NIM declined by 3% only from 13.26% to 12.82%, compared to a 4% increase for large banks, whose ratio increased from 3.57% to 3.73%, implying that large banks' NIM had improved though at a small magnitude as opposed to small banks which recorded a declined stance. However, large banks' NIMs were still below the industry ratio. The industry ratio declined by 10%, from 7.71% to 6.92%. As summarized in Table 4.17, small banks' gross loans to total deposits ratio increased from 59.52% to 81.56%, whereas large banks' ratio increased from 62.19% to 73.87%. The above results show reasonable evidence of the negative relationship between gross loans to total deposits and small banks' NIM.

In contrast, for large banks, the impact was contrariwise. Small banks' NPL increased by 115% from 5.64% to 12.55%. Due to the statutory requirement that banks suspend interest once the loan turns into NPL, small banks had gone through this requirement of suspending interests for all loans that had turned into NPL, thus negatively affecting

small banks' NIM as interest income declined. For the case of large banks, the results show that the ratio remained almost constant as NPL was 7.14% before TSA and 6.98%, say 7% after TSA. This implies that NPLs did not significantly impair large banks' NIM compared to small banks. As discussed in the previous sections, the present study is consistent with the study by Ames et al. (2018) and Ellul and Yerramilli (2013), who revealed a positive risk and performance relationship. A review of financial statements analysis had somehow revealed similar results for the banking sector as a whole, as the industry had experienced general stability of the Net Interest Margin (NIM), as evidenced in table 4.14.

Nevertheless, Ames et al. (2018) revealed that such a positive risk and performance relationship transpires in the long run and not in the very short run; hence what is still concealed here is the definition of a long run in the context of bank performance. In addition, the study found that a strong risk committee has a direct positive impact on the effectiveness of the risk management practice. This is to say that, conventional banking institutions' performance and their risk-taking attitude have shown a positive association. In contrast, there was no evidence of a similar relationship between Islamic banks. Based on the above arguments, it is therefore imperative to carry out a similar study after some time to check the long-run impact of risk and performance.

4.8.2 Linear Relationship Between Bank Risks and Regulatory Performance (CAMELS) using Ownership Concentration and Bank Size as Interaction Variables

This section discusses the influence of bank risks on each of the bank categories. Table 4.25 shows the regression results between bank risks and regulatory performance using bank size and ownership concentration as interaction variables.

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Table 4. 25: Relationship Between Bank Risks and Regulatory Performance (CAMELS) using Ownership Concentration and Bank Size as Interaction Variables

Variable	Regulatory Performance (CAMELS Rating)	
	Coefficient	Test Statistics
DM*NPL	2.378	4.02***
		(0.000)
FB*NPL	2.654	7.37***
		(0.000)
DB*LDR	0.428	3.91***
		(0.000)
FB* LDR	1.109	5.59***
		(0.000)
PB*NPL	3,118	10.22***
		(0.000)
PB* LDR	0.906	5.11***
		(0.000)
GB*NPL	2.087	8,80***
		(0.000)
GB* LDR	0.807	2.53**
		(0.11)
LB*NPL	3.76	10.18***
		(0.000)
SB*NPL	2.931	9.67***
		(0.000)
LB*LDR	1.169	5.55***
		(0.000)
SB* LDR	0.641	2.80***
		(0.000)
I.TSA#FB*NPL	-0.972	-2.28**
		(0.023)

Note that: *, **, and *** imply that the variable is statistically significant at 10%, 5% and 1%significance levels. The panel data results are reported using t-statistics, whereby the p-values are put in parenthesis. FB=Foreign banks, DM=Domestic banks, LB=Large banks, SB=Small banks, GB=Government of state-owned banks, Any variable named after a numeric coefficient (1.) represents a dummy variable. E.g. 1. TSA represents TSA as a dummy variable. Moreover, any variable tagged with # implies TSA interaction. UN-WINS means a variable that was not winsorized at any winsorization fraction.

In addition to the above regression results, this study used financial analysis to complement and amplify regression results in Table 4.25 for each of the bank classifications (i.e. domestic versus foreign banks, private versus state-owned banks, and large versus small banks) by computing banks' CAMELS ratios and ratings, with

the views of observing the trend of bank performance for the period under review. Moreover, to make the study more interesting, the analysis was extended by comparing banks' specific financial performance (CAMELS ratings) against each of the bank classifications.

Generally, this subsection presents results in four parts. The first part discusses the influence of NPL on bank performance, whereas the second part focuses on the influence of gross loans to total deposits on bank performance. The third aspect covers the overall literature to back up the findings in parts one and two. Many studies have discussed bank risks as a whole by covering both credit and liquidity risks as key risk indicators. Generalized literature covering NPL and gross loans to total deposit ratios as proxies for credit and liquidity risk was applied. This approach was used to avoid the repetition of similar literature on each risk indicator. As highlighted above, domestic and private banks were used as interaction variables to check the influence of these bank-specific characteristics (NPLs and gross loans to total deposits) on bank performance. Lastly, the fourth part discusses financial analysis results by showing trends of domestic and foreign banks' performance paralleled by NPLs and gross loans to total deposit ratios. This part provides a detailed analysis of regulatory performance before and after TSA adoption.

It is also imperative to refresh from previous paragraphs that CAMELS ratings are read in ascending order from a rating scale of 1 to 5. The lowest rating implies strong performance, while the highest rating represents a critical or worst-case scenario. As highlighted in previous paragraphs, the CAMELS ratings are scaled as follows; Rating

1 means strong, rating 2 means satisfactory, rating 3 means marginal, rating 4 means unsatisfactory and rating 5 means critical. Thus, the lower the rating, the better the performance and vice versa.

a) **Ownership Concentration and Regulatory Performance (CAMELS)**

This section discusses risk (NPL and Gross Loans to Total Deposits) and regulatory performance (CAMELS) using ownership concentration as interaction variables.

(i) **Relationship Between NPLs and Banks' Regulatory Performance (CAMELS) using Domestic and Foreign Banks as Interaction Variables**

Regression results on CAMELS rating show that the effects of NPL on both domestic and foreign banks' ratings were positive and statistically significant (2.378, p<0.01 for domestic banks) and (2.654, p<0.01 for foreign banks) before TSA and the coefficient turned statistically insignificant afterwards. The positive coefficients before TSA imply that an increase in NPL by 1% increased CAMELS rating by the above-mentioned regression coefficients, thus deteriorating bank performance. It should be appreciated that, though NPLs for both domestic and foreign banks were still in single digits before the TSA adoption, the trends in Table 4.17 show that the same was still increasing. As for the case of domestic banks, NPL rose from 4.94% in 2010 to 6.64% in 2015, a year before TSA adoption. In the same vein, foreign banks' NPL rose from 3.28% in 2010 to 8.08% in 2015, a year before TSA adoption.

However, after TSA adoption, the results were not statistically significant for both domestic and foreign banks' CAMELS ratings meaning that TSA had little impact on the ratings during the post-TSA adoption period.

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Nevertheless, the financial statements analysis in Table 4.11 shows a deterioration of domestic banks' rating from the satisfactory level (2) recorded before TSA to the marginal level (3) after TSA adoption. Moreover, NPL rose from 6.45% to 13.29% after TSA adoption, thus justifying the above deterioration of the CAMELS rating. It should be appreciated that, though regression results for domestic banks are statistically insignificant, there is an indirect relationship between TSA, NPL and CAMELS rating, such that as NPL increases, the CAMELS rating also deteriorates. It has been observed that during the post-TSA period, domestic banks' NPL ratio accelerated to double digits, thus negatively affecting the CAMELS rating, as shown in Table 4.11.

Contrariwise, the CAMELS rating on foreign banks remained constant at satisfactory levels (2), thus confirming that TSA had not impacted the foreign banks' CAMELS rating. It should also be appreciated that foreign banks' NPL had not changed much as the ratio remained almost constant after TSA, thus justifying the reason for the stable foreign banks' rating before and after TSA. Table 4.17 shows that foreign banks' NPL was 8.08% before TSA, and the same remained at 8.36% afterwards. It should be appreciated that NPLs directly impact banks' asset quality; hence, if the NPL ratio increases, it may eventually affect banks' earnings and capital. As such, credit risk should be carefully examined as its impact might affect the overall bank performance. Based on the above NPL trend, there is reasonable evidence that NPL directly or indirectly affected the CAMELS rating after TSA adoption regardless of its statistically insignificant relationship.

The above results partially reject the null hypothesis, which states that the influence of ownership concentration has no significant impact on bank performance before and after TSA adoption. Regression results have recorded diverse results, as observed above. At one point, the results were statistically significant and statistically insignificant at another point, thus making it challenging to come up with a generalized conclusion. However, based on the results of financial statements analysis in Tables 4.11 and 4.15, the study found that, regardless of statistical significance, TSA has directly or indirectly affected bank performance, as evidenced by a general deterioration of CAMELS ratings. Generalized literature to back the above results is presented in subsequent paragraphs.

(ii) **Relationship Between Gross Loans to Total Deposits and Banks' Regulatory Performance (CAMELS) using Domestic and Foreign Banks as Interaction Variables**

Regression results on CAMELS rating show that the effects of gross loans to total deposits on both domestic and foreign banks' ratings were positive and statistically significant before TSA. Regression results recorded (0.428, $p<0.01$ for domestic banks) and (1.109, $p<0.01$ for foreign banks). In contrast, coefficients for these banks turned statistically insignificant afterwards. The positive coefficients before TSA imply that an increase in NPL by 1% increased CAMELS rating by the above-mentioned regression coefficients, thus deteriorating bank performance. It should be appreciated that, though the ratio of gross loans to total deposits for both domestic and foreign banks was still below 75% before the TSA adoption, the trends in Table 4.17 show that the same was still increasing. As for the case of domestic banks, the gross

loans to total deposits ratio rose from 53.66% in 2010 to 74.52% in 2015, a year before TSA adoption.

Similarly, the foreign banks' ratio rose from 60.17% in 2010 to 64.86% in 2015, a year before TSA adoption. It should be appreciated that, as gross loans increase, chances for rising NPLs increase. As such, the financial analysis revealed that the growth of gross loans to total deposits ratio came with an increase in NPLs, thus affecting asset quality, earnings, and bank capital. Domestic banks' NPL rose from 6.45% to 13.29% after TSA adoption, thus justifying the above deterioration of the CAMELS rating. For the case of foreign banks, the NPL ratio remained almost constant as the same was 8.08% before TSA and remained at 8.36% afterwards. However, after TSA adoption, the results were not statistically significant for domestic and foreign banks, meaning that TSA had little impact on the ratings during the post-TSA adoption period. Nevertheless, the financial statements analysis in Table 4.17 shows a deterioration of domestic banks' rating from the satisfactory level (2) recorded before TSA to the marginal level (3) after TSA adoption.

It should be appreciated that the gross loans to total deposits ratio directly impacts banks' liquidity position. If the ratio exceeds 80%, chances for high credit risks due to high NPLs may eventually affect banks' earnings and capital. In light of the preceding, liquidity risk should be carefully examined as its impact might affect the overall bank performance. Based on the above gross loans to total deposits ratio and the NPL trends, there is reasonable evidence that gross loans to total deposits directly or indirectly

affected the CAMELS rating after TSA adoption regardless of its statistical significance level.

Generally, the above results partially reject the null hypothesis, which states that the influence of ownership concentration has no significant impact on bank performance before and after TSA adoption. Regression results have recorded diverse results, as observed above. At one point, the results were statistically significant and statistically insignificant at another point, thus making it challenging to come up with a generalized conclusion. However, based on the results of financial analysis in Tables 4.17 and 4.16, the study found that, regardless of statistical significance, TSA has directly or indirectly affected bank performance, as evidenced by a general deterioration of CAMELS ratings. Generalized literature to back the above results is presented in the subsequent paragraph below.

- **Generalized Literature Review to Back up the Above Regression Results**

The above results for the CAMELS rating above had shown diverse relationships. The results show partial rejection and acceptance of the null hypothesis, which states that the influence of ownership concentration has no significant impact on bank performance before and after TSA. The study found that all performance indicators had varying relationships in both periods, such as failing to conclude the relationships between the abovementioned variables. It should be appreciated that several past studies came up with similar results. Therefore, based on their results, we can argue that there are no conclusive results about the relationships between independent and dependent variables. The results may differ in many ways. The study by Aljughaiman

and Salama (2019), Pillai, et al. (2017), and Victoria et al. (2018) integrated the agency and the institutional theory to explain bank performance in the MENA countries. The findings of the studies caution that, depending on the measurement criteria used for the analysis, it is imperative to identify whether the firms' specific governance structure or the ownership structure or characteristics are used as independent variables to gauge their impact on firms' performance. Similar findings were found by Wanke et al. (2019). They concluded that earnings, financial position and financial soundness indicators depend upon various characteristics such as the type of banking institutions, the origin and bank ownership structure. However, some barriers such as cultural differences and regulatory factors may drive the result in a contrary direction. In light of the above, the present study concludes that TSA negatively impacted banks' performance. It should be appreciated that even those variables that were observed to be statistically insignificant were confirmed to have an indirect relationship between the variables and bank performance.

A good example is NPL ratios which were in some instances recording statistically insignificant relationships; meanwhile, CAMELS ratings were deteriorating. For that reason, we can generally conclude that, regardless of the statistical significance of some variables, TSA adoption came up with both a direct and or an indirect negative influence on bank performance. However, based on almost all regression results above, there is reasonable evidence to conclude that TSA adoption did not primarily affect domestic and foreign banks' CAMELS ratings, as summarized in Table 4.11.

- **The Summarized Trend of Gross Loans to Total Deposits and NPL Ratios Against Banks' Regulatory Performance (CAMELS) for Domestic and Foreign Banks**

Figure 4.11 shows the trend of NPL and Gross loans to total deposits with CAMELS rating. It should be appreciated that credit risk and liquidity risks are at the heart of bank performance. If the liquidity rate increases due to the high gross loans to deposits, the chances for an increase in NPL becomes very high, thus affecting banks' earnings and capital. As such, the overall CAMELS rating might negatively deteriorate.

Figure 4. 11: Trend of NPLs and Gross Loans to Total Deposits and CAMES Rating for (Domestic Versus Foreign)
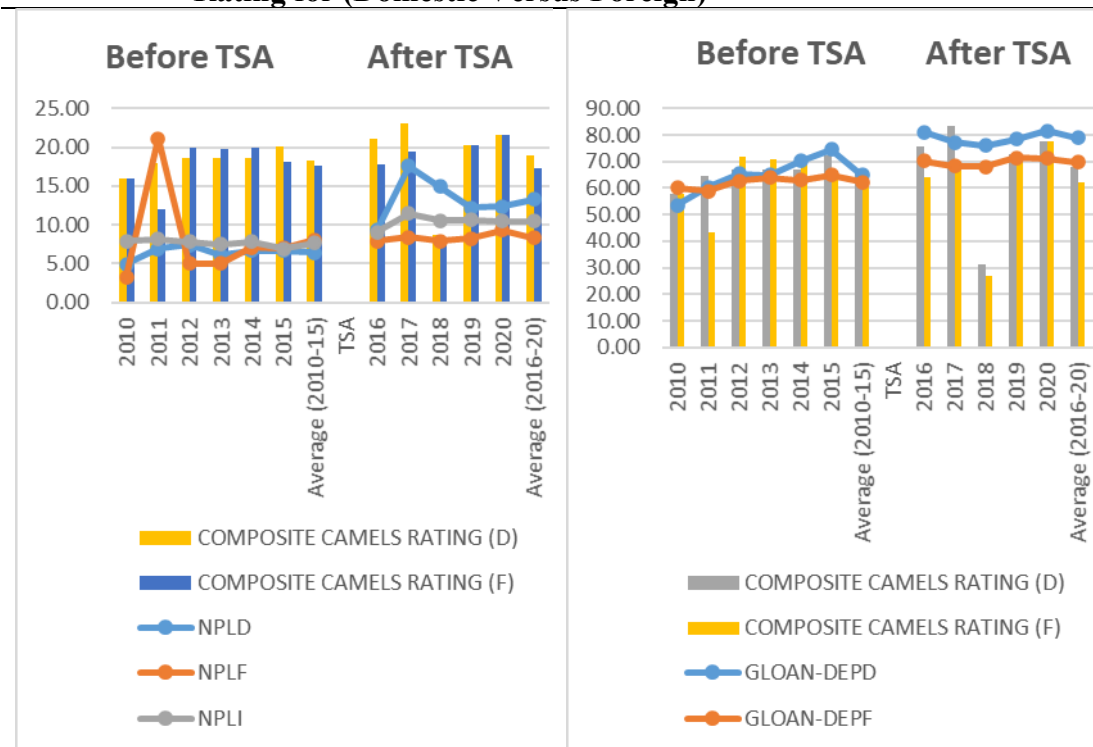
Composite CAMELS Rating (D)=Domestic Banks, Composite CAMELS Rating (F)= Foreign Banks, NPLD=Non-Performing Loans for Domestic Banks, NPLF=Non-Performing Loans for Foreign Bank, NPLI =Non-Performing Loans for the Banking Industry

Composite CAMELS Rating (D)= Domestic Banks, Composite CAMELS Rating (F)= Foreign Banks, LDR (D) = Gross Loans to Total Deposits for Domestic Banks LDR (F) = Gross Loans to Total Deposits for Foreign Banks

Figure 4.11 above shows that after TSA adoption, the CAMELS rating for domestic deteriorated while foreign banks' rating had slightly improved. Domestic banks' rating slightly deteriorated from 2.20 to 2.27 compared to foreign banks, whose rating somewhat enhanced from 2.11 to 2.08, implying that foreign banks' performance had slightly improved. In contrast, domestic banks' performance had slightly declined.

However, both the increase and decrease in the CAMELS rating were not significant. Suppose we had to write down the decimal points to a whole number. In that case, we could easily conclude that the rating remained almost constant at a satisfactory level (2) and that both TSA and the COVID-19 impact had not shaken the CAMELS rating to a more considerable extent. This can be explained by the 2020 financial sector supervision report, which shows that from 2019 to 2020, there was an improvement in the banking sector's key performance indicators. Banks' liquidity, profitability and capital adequacy ratios remained sound and reasonably stable. Capital adequacy ratios (core capital to risk-weighted assets and total capital to risk-weighted assets) had improved and were far above the statutory ratios. The report revealed that the improvement in capital adequacy was two-fold, one being the injection of additional capital by banking institutions to meet the minimum statutory requirements and the other one being the act of banks retaining their profits with the view of growing up their capital base. In light of the above, the banking sector's stability was mainly due to regulatory requirements for institutions to inject more capital from a minimum of five billion to fifteen billion. As summarized in Table 4.17, domestic banks' gross loans to total deposits ratio increased from 64.89% to 78.86%, paralleled by an increase in foreign banks' ratio from 62.29% to 69.86%.

Consequently, an increase in the gross loans to total deposits ratio came with an increase in NPLs ratio for domestic and foreign banks. For domestic banks, NPL rose from 6.45% to 13.29%, whereas foreign banks' ratio remained almost constant as it marginally increased from 8.08% to 8.36%. The above results show a direct or indirect negative relationship between gross loans to total deposits and CAMELS.

(iii)   Relationship Between NPLs and Banks' Regulatory Performance (CAMELS) using Private and State-Owned Banks as Interaction Variables

Regression results on CAMELS rating show that the effects of NPL on both private and state-owned banks' ratings were positive and statistically significant (3.118, $p<0.01$ for private banks) and (2.087, $p<0.01$ for state-owned banks) before TSA and the coefficient turned statistically insignificant afterwards. The positive coefficients before TSA imply that an increase in NPL by 1% increased CAMELS rating by the above-mentioned regression coefficients, thus deteriorating bank performance. It should be appreciated that, though NPLs for both private and state-owned banks were still in single digits before the TSA adoption, the trends in Table 4.17 show that the same was still increasing. As for the case of private banks, NPL rose from 5.02% in 2010 to 6.51% in 2015, a year before TSA adoption. In the same vein, state-owned banks' NPL rose from 3.49% in 2010 to 3.51% in 2015, a year before TSA. However, after TSA adoption, the results were not statistically significant for both private and state-owned banks' CAMELS ratings meaning that TSA had little impact on the ratings during the post-TSA adoption period.

Nevertheless, financial statements analysis in Table 4.11 shows a deterioration of both private and state-owned banks' ratings, whose CAMELS rating deteriorated from a satisfactory level (2) recorded before TSA to the marginal level (3) after TSA adoption. Moreover, private banks' NPL rose from 6.45% recorded before TSA to 13.29% after TSA adoption, whereas the state-owned ratio increased from 7.34% to 10.94%, thus justifying the above deterioration of the CAMELS ratings. It should be appreciated that, though regression results for private and state-owned banks were not statistically significant after TSA, there is an indirect relationship between TSA, NPL and CAMELS rating, such that as NPL increases, the CAMELS rating deteriorates as well. Generalized literature to back the above results is presented in subsequent paragraphs.

(iv) Relationship Between Gross Loans to Total Deposits and Banks' Regulatory Performance (CAMELS) using Private and State-Owned Banks as Interaction Variables
- **Regression Results**

Regression results on CAMELS rating show that gross loans' effects on total deposits on private and state-owned banks' ratings were positive and statistically significant before TSA. The recorded coefficients were (0.906, $p<0.01$ for private banks) and (0.807, $p<0.01$ for state-owned banks). In contrast, the coefficients turned statistically insignificant afterwards. The positive coefficients before TSA imply that an increase in NPL by 1% increased CAMELS rating by the above-mentioned regression coefficients, thus deteriorating bank performance. It should be appreciated that, though the ratio of gross loans to total deposits for both private and state-owned banks was still below 75% before the TSA adoption, the trends in Table 4.17 show that the same was still increasing. As for the case of private banks, the gross loans to total deposits

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ratio rose from 73.16% in 2010 to 73.77% in 2015, a year before TSA adoption. In the same vein, state-owned banks' ratio rose from 46.48% in 2010 to 71.15% in 2015, a year before TSA adoption. It should be appreciated that, as gross loans increase, chances for rising NPLs increase. As such, the financial analysis revealed that the growth of gross loans to total deposits ratio came with an increase in NPLs, which affected asset quality, earnings, and the bank's capital. Private banks' gross loans to total deposits ratio rose from 72.91% to 73.99% afterwards.

Consequently, NPL rose from 5.89% to 10.72% after TSA adoption, thus justifying the above deterioration of the private banks' CAMELS rating. For the case of state-owned banks, the ratio of gross loans to total deposits increased from 59.52% to 76.73% after TSA. Consequently, NPL rose from 5.64% to 12.15% afterwards. However, after TSA adoption, the regression results were not statistically significant for private and state-owned banks, meaning that TSA had little impact on the ratings during the post-TSA adoption period. Nevertheless, the financial statements analysis in Table 4.17 shows a deterioration of both private and state-owned banks' ratings from satisfactory (2) before TSA to marginal (3) after TSA adoption. It should be appreciated that the gross loans to total deposits ratio directly impacts banks' liquidity position; if the ratio exceeds 80%, chances for high credit risks due to high NPL arise, which eventually affect banks' earnings and capital. In light of the preceding, liquidity risk should be carefully examined as its impact might affect the overall bank performance. Based on the above gross loans to total deposits ratio and the NPL trends, there is reasonable evidence that gross loans to total deposits directly or indirectly affected the CAMELS rating after TSA regardless of the statistically insignificant

relationship. Generalized literature to back the above results is presented in subsequent paragraphs.

- **Generalized Literature Review to Back up the Above Regression Results**

The above results for the CAMELS rating above had shown diverse relationships. The results show partial rejection and acceptance of the null hypothesis, which states that the influence of bank characteristics has no significant impact on bank performance before and after TSA. The study found that all performance indicators had varying relationships in both periods, such as failing to conclude the relationships between the abovementioned variables. It should be appreciated that some past studies came up with similar results. Therefore, based on their results, we can argue that there are no conclusive results about the relationships between independent and dependent variables. The results may differ in several ways. The study by Aljughaiman and Salama (2019), Pillai, et al. (2017), and Victoria et al. (2018) integrated the agency and the institutional theory to explain bank performance in the MENA countries. The findings of the studies caution that, depending on the measurement criteria used for the analysis, it is imperative to identify whether the firms' specific governance structure or the ownership structure or characteristics are used as independent variables to gauge their impact on firms' performance. Similar findings were found by Wanke et al. (2019). They concluded that earnings, financial position and financial soundness indicators depend upon various characteristics such as the type of banking institutions, the origin and bank ownership structure. However, some barriers such as cultural differences and regulatory factors may drive the result in a contrary direction. In light of the above, the present study concludes that TSA negatively impacted banks'

performance. It should be appreciated that even those variables that were observed to be statistically insignificant were confirmed to have an indirect relationship between the variables and bank performance.

A good example is NPLs ratios which were in some instances recording statistically insignificant relationships; meanwhile, CAMELS ratings were deteriorating. For that reason, we can generally conclude that, regardless of the statistical significance of some variables, TSA adoption came up with both a direct and or an indirect negative influence on bank performance. However, based on almost all regression results above, there is a shred of reasonable evidence to conclude that TSA adoption did not primarily affect domestic and foreign banks' CAMELS ratings, as summarized in Table 4.17.

- **The Summarized Trend of Gross Loans to Total Deposits and NPLs Ratios Against Banks' Regulatory Performance (CAMELS) for Private and State-Owned Banks**

Figure 4.12 shows the trend of NPL and Gross loans to total deposits with CAMELS rating. It should be appreciated that credit risk and liquidity risks are at the heart of bank performance. If the liquidity risk increases due to the high gross loans to deposits, the chances for an increase in NPL become very high, thus affecting banks' earnings and capital. As such, the overall CAMELS rating might negatively deteriorate.

Figure 4.12: Trend of CAMELS Rating NPLs and Gross Loans to Deposits Ratio for Private and State-Owned Banks
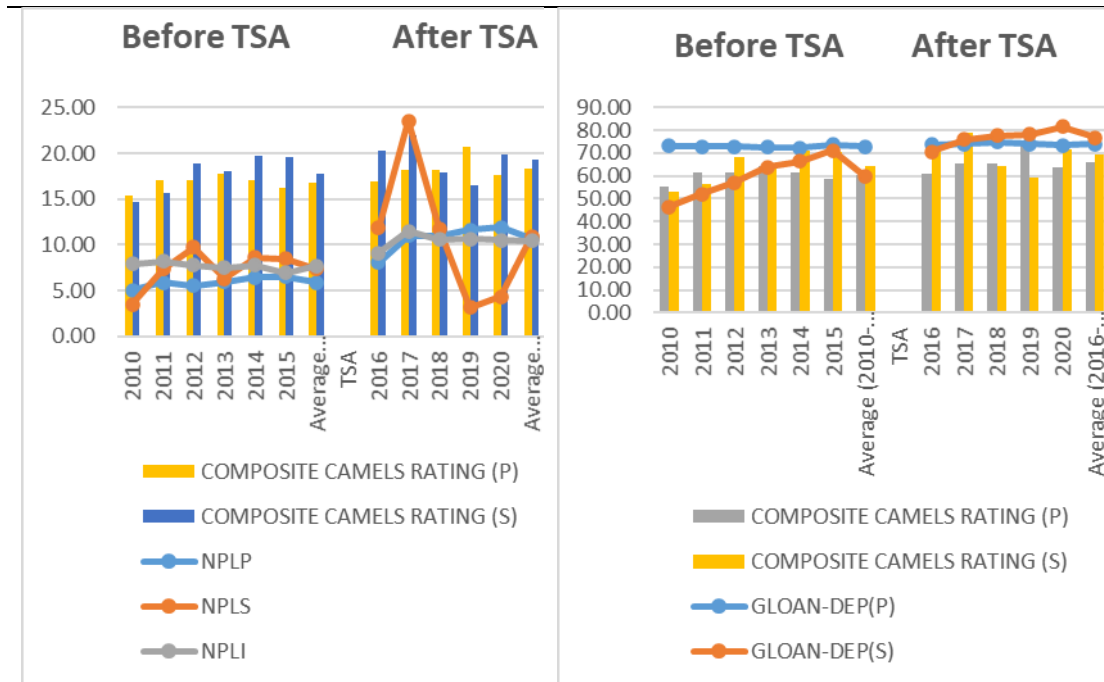
Composite CAMELS Rating (P)= Private Banks, Composite CAMELS Rating (S)= State–Owned Banks, NPLP=Non-Performing Loans for Private Banks, NPLS=Non-Performing Loans for State-Owned Banks, NPLI =Non-Performing Loans for the Banking Industry

Composite CAMELS Rating (P)= Private Banks, Composite CAMELS Rating (S)= State-Owned Banks, LDR (P) = Gross Loans to Total Deposits for Private Banks, LDR (S) = Gross Loans to Total Deposits for State-Owned Banks

Figure 4.12 shows that the CAMELS rating for both private and state-owned banks deteriorated after TSA adoption. However, the rating for state-owned banks had deteriorated slightly higher than private banks. Private banks' ratings had slightly deteriorated from 2.35 to 2.56 compared to state-owned banks, whose ratings slightly deteriorated from 2.49 to 2.70, implying that the performance of both private and state-owned banks had slightly deteriorated after TSA. However, the deterioration of the CAMELS rating was not significant. If we round down the decimal points to a whole number, we could easily conclude that the rating remained almost constant at a

marginal level (3); thus, neither TSA nor COVID-19 had impacted the CAMELS rating after TSA. This can be explained by the 2020 financial sector supervision report, which shows that from 2019 to 2020, there was an improvement in the sector's performance—key performance indicators. Banks' liquidity, profitability and capital adequacy ratios remained sound and reasonably stable for numerous reasons. Capital adequacy ratios (core capital to risk-weighted assets and total capital to risk-weighted assets) had improved and were reasonably far above the statutory ratios. The report revealed that the improvement in capital adequacy was two-fold, one being the injection of additional capital by banking institutions to meet the minimum statutory requirements and the other one being the act of banks retaining their profits with the view of growing up their capital base. In light of the above, the banking sector's stability was mainly due to regulatory requirements for institutions to inject more capital from a minimum of five billion to fifteen billion. If it were not for the banks to inject more capital, the situation could be critical for most banking institutions.

As summarized in Table 4.17, private banks gross loans to total deposits ratio increased from 72.91% to 73.99%, whereas state-owned banks' ratio increased from 59.52% to 76.73%. Consequently, an increase in the gross loans to total deposits ratio came with an increase in NPLs ratio for both private and state-owned banks. For private banks, NPL rose from 6.45% to 13.29%, whereas state-owned banks' ratio rose from 8.08% to 8.36%. Based on the above results, there is reasonable evidence to conclude a direct or indirect negative relationship between gross loans to total deposits and CAMELS rating.

b) Relationship Between Bank Risks (NPLs and Gross Loans to Total Deposits Ratio on Banks' Regulatory Performance (CAMELS) using Large and Small Banks as Interaction Variables

As highlighted in previous sections, this subsection presents results in four parts. The first part discusses the influence of NPL on bank performance, whereas the second part focuses on the influence of gross loans to total deposits on bank performance. The third aspect covers the overall literature to back up the findings in parts one and two. These risk indicators (NPL and gross loans to total deposits) share similar characteristics. Many studies have discussed bank risks as a whole by covering both credit and liquidity risks as key risk indicators. As such, to avoid repetition of similar literature on each regression result, this study has discussed generalized literature covering both credit and liquidity risks using NPL and gross loans to total deposit ratios as proxies for credit and liquidity risk, respectively. As highlighted above, domestic and private banks were used as interaction variables to check the influence of these bank-specific characteristics (NPLs and gross loans to total deposits) on bank performance. Lastly, the fourth part discusses financial analysis results by showing trends of both large and small banks' performance paralleled with NPLs and gross loans to total deposit ratios. This part provides a detailed analysis of regulatory performance before and after TSA adoption.

It is also imperative to refresh from previous paragraphs that CAMELS ratings are read in ascending order from a rating scale of 1 to 5. The lowest rating implies strong performance, while the highest rating represents a critical or worst-case scenario. As highlighted in previous paragraphs, the CAMELS ratings are scaled as follows; Rating 1 means strong, rating 2 means satisfactory, rating 3 means marginal, rating 4 means

unsatisfactory and rating 5 means critical. Thus, the lower the rating, the better the performance and vice versa.

(i) Relationship Between NPLs on Banks' Regulatory Performance (CAMELS) using Large and Small Banks as Interaction Variables

Regression results on CAMELS rating show that the effects of NPL on both large and small banks' ratings were positive and statistically significant (3.76, $p<0.01$ for large banks) and (2.931, $p<0.01$ for small banks) before TSA and the coefficient turned statistically insignificant afterwards. The positive coefficients before TSA imply that an increase in NPL by 1% increased CAMELS rating by the above-mentioned regression coefficients, thus deteriorating bank performance. It should be appreciated that, though NPLs for both large and small banks were still in single digits before the TSA adoption, the trends in Table 4.17 show that the same was still increasing. As for the case of large banks, NPL was almost constant at an average rate of 7% before TSA adoption, whereas small banks' NPL ratio rose from 3.97% in 2010 to 6.96% in 2015, a year before TSA. However, after TSA adoption, the results were not statistically significant for both large and small banks' CAMELS ratings meaning that TSA had little impact on the ratings during the post-TSA adoption period.

Nevertheless, the financial statements analysis in Table 4.16 shows a deterioration of both large and small banks' ratings, whose CAMELS rating deteriorated from a satisfactory level (2) recorded before TSA to the marginal level (3) after TSA adoption. Moreover, large banks' NPL ratio was almost constant at an average of 7%% in both periods (before and after TSA adoption). In contrast, the small banks' ratio rose from 5.64% to 12.15%, thus justifying the above deterioration of the CAMELS ratings. It

should be appreciated that, though regression results for both large and small banks were not statistically significant after TSA, there is an indirect relationship between TSA, NPL and CAMELS rating, such that as NPL increases, the CAMELS rating deteriorates as well. Generalized literature to back the above results is presented in subsequent paragraphs.

(ii)   Relationship Between Gross Loans to Total Deposits and Banks' Regulatory Performance (CAMELS) using Large and Small Banks as Interaction Variables

Regression results on CAMELS rating show that gross loans' effects on total deposits on both private and state-owned banks' ratings were positive and statistically significant. The recorded coefficients were (1.196, $p<0.01$ for large banks) and (0.641, $p<0.01$ for small banks) before TSA, and the coefficient turned statistically insignificant afterwards. The positive coefficients before TSA imply that an increase in NPL by 1% increased CAMELS rating by the above-mentioned regression coefficients, thus deteriorating bank performance. It should be appreciated that, though the ratio of gross loans to total deposits for both large and small banks was still below 80% before the TSA adoption, the trends in table 4.17 show that the same was still increasing. As for the case of large banks, the gross loans to total deposits ratio rose from 55.99% in 2010 to 68.19% in 2015, a year before TSA adoption.

Similarly, the small banks' ratio rose from 46.48% in 2010 to 71.15% in 2015, a year before TSA adoption. It should be appreciated that, as gross loans increase, chances for rising NPLs increase. As such, the financial analysis revealed that the growth of gross loans to total deposits ratio came with an increase in NPLs, which affected asset

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quality, earnings, and the bank's capital. Large banks' gross loans to total deposits ratio rose from 62.16% before TSA to 72.78% afterwards. Consequently, large banks' NPL ratio remained almost constant at an average rate of 7%, implying that they were keen to monitor their NPL ratio. However, the ratio was still above the statutory NPL ratio of 5%; hence the recorded NPL of 7% was still unfavourable before the regulatory eyes. For the case of small banks, the ratio of gross loans to total deposits increased from 70.13% to 82.26% after TSA.

Consequently, NPL rose from 5.64% to 12.15% afterwards. However, after TSA adoption, the regression results were not statistically significant for both large and small banks, meaning that TSA had little impact on the ratings during the post-TSA adoption period. Nevertheless, the financial statements analysis in Table 4.16 shows a deterioration of both large and small banks' ratings from the satisfactory level (2) recorded before TSA to the marginal level (3) after TSA adoption. It should be appreciated that the gross loans to total deposits ratio directly impacts banks' liquidity position; if the ratio exceeds 80%, chances for high credit risks due to high NPL arise, which eventually affect banks' earnings and capital. In light of the preceding, liquidity risk should be carefully examined as its impact might affect the overall bank performance.

Based on the above gross loans to total deposits ratio and the NPL trends, there is reasonable evidence that gross loans to total deposits directly or indirectly affected the CAMELS rating after TSA regardless of the statistically insignificant relationship. Generalized literature to back the above results is presented in subsequent paragraphs.

- **Generalized Literature Review to Back up the Above Regression Results**

The above results for the CAMELS rating above had shown diverse relationships. The results show partial rejection and acceptance of the null hypothesis, which states that the influence of bank characteristics has no significant impact on bank performance before and after TSA. The study found that all performance indicators had varying relationships in both periods, such as failing to conclude the relationships between the abovementioned variables. It should be appreciated that some past studies came up with similar results. Therefore, based on their results, we can argue that there are no conclusive results about the relationships between independent and dependent variables. The results may differ in several ways. The study by Aljughaiman and Salama (2019), Pillai, et al. (2017), and Victoria et al. (2018) integrated the agency and the institutional theory to explain bank performance in the MENA countries.

The findings of the studies caution that, depending on the measurement criteria used for the analysis, it is imperative to identify whether the firms' specific governance structure or the ownership structure or characteristics are used as independent variables to gauge their impact on firms' performance. Similar findings were found by Wanke et al. (2019). They concluded that earnings, financial position and financial soundness indicators depend upon various characteristics such as the type of banking institutions, the origin and bank ownership structure. However, some barriers such as cultural differences and regulatory factors may drive the result in a contrary direction. In light of the above, the present study concludes that TSA negatively impacted banks' performance. It should be appreciated that even those variables that were observed to

be statistically insignificant were confirmed to have an indirect relationship between the variables and bank performance.

A good example is NPLs ratios which were in some instances recording statistically insignificant relationships; meanwhile, CAMELS ratings were deteriorating. For that reason, we can generally conclude that, regardless of the statistical significance of some variables, TSA adoption came up with both a direct and or an indirect negative influence on bank performance. However, based on almost all regression results above, there is reasonable evidence to conclude that TSA adoption did not primarily affect small and large banks' CAMELS ratings, as summarized in Table 4.17.

- **The Summarized Trend of Gross Loans to Total Deposits and NPLs Ratios Against Banks' Regulatory Performance (CAMELS) for Large and Small Banks**

Figure 4.13 shows the trend of NPL and Gross loans to total deposits in relation to CAMELS rating. It should be appreciated that credit risk and liquidity risks are at the heart of bank performance. If the liquidity rate increases due to the high gross loans to deposits, the chances for an increase in NPL becomes very high, thus affecting banks' earnings and capital. As such, the overall CAMELS rating might negatively deteriorate.

Figure 4. 13: Trend of CAMELS Rating NPLs and Gross Loans to Deposits Ratio for Large and Small Banks
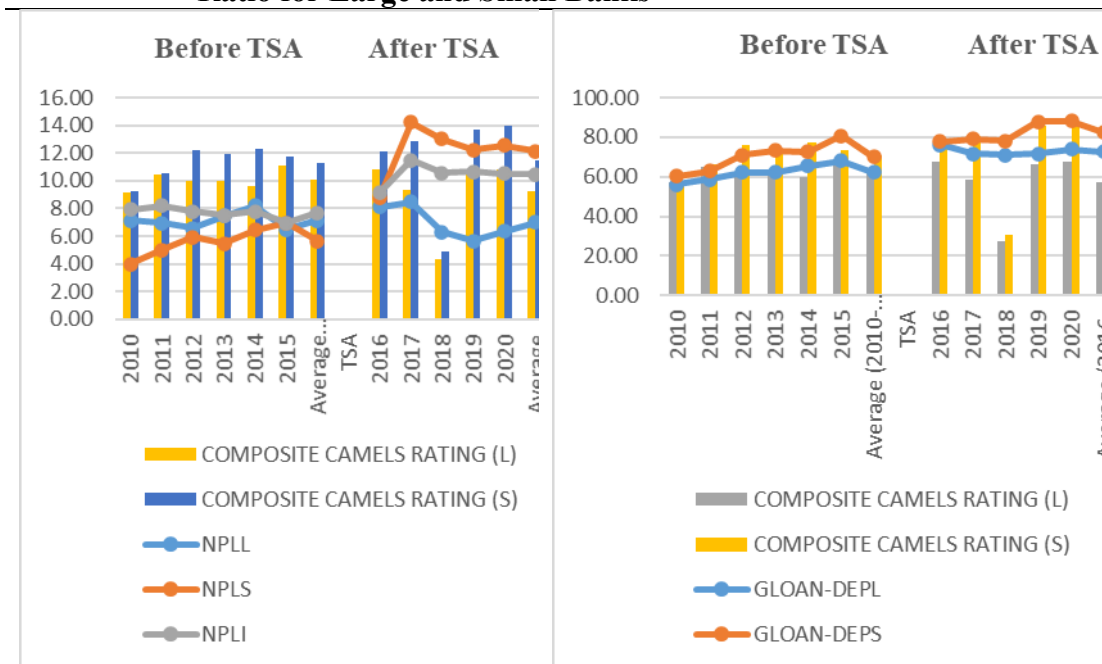
Composite CAMELS Rating (L)= Large Banks, Composite CAMELS Rating (F)= Small Banks, NPLL=Non-Performing Loans for Large Banks, NPLS=Non-Performing Loans for Small Bank, NPLI =Non-Performing Loans for the Banking Industry

Composite CAMELS Rating (L)= Large Banks, Composite CAMELS Rating (S)= Small Banks, LDR (L) = Gross Loans to Total Deposits for Large Banks, LDR (S) = Gross Loans to Total Deposits for Small Banks.

Figure 4.13 shows that after TSA adoption, the CAMELS rating for small banks had deteriorated while large banks' ratings had slightly improved. Small banks' ratings slightly worsened from 2.48 to 2.52 compared to foreign banks, whose ratings somewhat enhanced from 2.20 to 2.01, implying that large banks' performance had slightly improved. In contrast, small banks' performance had somewhat declined. However, both the increase and decrease in the CAMELS rating were not significant. If we had to write down or up the decimal points to a whole number, we could easily conclude that the rating remained almost constant at a satisfactory level (2) for large banks.

In contrast, for small banks, the ratings remained constant at a marginal level (3). In addition, both TSA and the COVID_19 impact had not changed the CAMELS rating to a more considerable extent. The ratings remained almost constant before and after TSA. The 2020 financial sector supervision report shows that from 2019 to 2020, there was an improvement in the banking sector—key performance indicators. Banks' liquidity, profitability and capital adequacy ratios remained sound and reasonably stable for numerous reasons. Capital adequacy ratios (core capital to risk-weighted assets and total capital to risk-weighted assets) had improved and were reasonably far above the statutory ratios. The report revealed that the improvement in capital adequacy was two-fold, one being the injection of additional capital by banking institutions to meet the minimum statutory requirements and the other one being the act of banks retaining their profits with the view of growing up their capital base. In light of the above, the banking sector's stability was mainly due to regulatory requirements for institutions to inject more capital from a minimum of five billion to fifteen billion. Because of the preceding, small banks would be in a critical condition if capital levels were not increased. Moreover, during this period, two small banks (Tanzania Women's Bank and Twiga Bancorp merged with Tanzania Postal Bank. The merger helped to maintain small banks' status at marginal levels; otherwise, the same would be in a critical position.

As summarized in Table 4.17, large banks' gross loans to total deposits ratio increased from 62.16% to 72.78%, whereas small banks increased from 70.13% to 82.26%. In the same vein increase in the gross loans to total deposits ratio came with an increase in NPLs ratio for small banks though for large banks NPL ratio almost remained

constant as the same has recorded a slight decline. For large banks, NPL slightly declined from 7.14% to 6.98%, whereas small banks' ratio rose from 5.64% to 12.15%. Based on the above results, there is reasonable evidence of the presence of either a direct or an indirect negative relationship between gross loans to total deposits and CAMELS rating

4.83   Linear Relationship Between Bank Characteristics and Banks' Management Performance

As explained in previous sections, bank characteristics have been discussed in terms of bank risks and bank size. While NPL and gross loans-to-deposit ratios were used as risk indicators, asset size was used as a proxy for bank size. This section discusses the influence of bank risks on each of the bank categories. Table 4.26 shows the regression results between bank risks and regulatory performance using bank size and ownership concentration as interaction variables.

Table 4. 26: **Relationship Between Bank Risks (NPL and Gross Loans to Total Deposits Ratios) and Banks' Management Performance (Cost to Income Ratio) using Ownership Concentration and Bank Size as Interaction Variables**

Variable	Management Performance (Cost to Income Ratio)	
	Coefficient	Test Statistics
FOREIGN LDR*	5.139	3.77***
		(0.000)
PRIVATE LDR*	6.445	4.28***
		(0.000)
SMALL LDR*	5.061	2.03**
		(0.042)
*I.TSA#FORE*LDR*	-7.056	1.83*
		(0.067)

Note that: *, **, and *** imply that the variable is statistically significant at 10%, 5% and 1%significance levels. The panel data results are reported using t-statistics, whereby the p-values are put in parenthesis. Any variable named after a numeric coefficient (1.) represents a dummy variable. E.g. 1. TSA represents TSA as a dummy variable. Moreover, any variable tagged with # implies TSA interaction. UN-WINS means a variable that was not winsorized at any winsorization fraction.

In addition to the above regression results, this study used financial analysis to complement and amplify regression results in Table 4.21 for each of the bank classifications (i.e. domestic versus foreign banks, private versus state-owned banks, and large versus small banks) by computing banks' cost to income ratios with the views of observing the trend of bank performance for the period under review. Moreover, to make the study more interesting, the analysis was extended by comparing banks' specific management performance ratios (cost-to-income ratios) against each of the banks' classifications.

a) Relationship Between Bank Risks (NPLs and Gross Loans to Total Deposits Ratio) on Banks' Management Performance (Cost to Income Ratio) using Domestic and Foreign Banks as Interaction Variables

This subsection presents results in four parts. The first part discusses the influence of NPL on management performance, whereas the second part focuses on the influence

of gross loans to total deposits on management performance. The third aspect covers the overall literature to back up the findings in parts one and two. These risk indicators (NPL and gross loans to total deposits) share similar characteristics. A number of studies have discussed bank risks as a whole by covering both credit and liquidity risks as key risk indicators. As such, to avoid repetition of similar literature on each regression result, this study has discussed generalized literature covering both credit and liquidity risks using NPL and gross loans to total deposit ratios as proxies for credit and liquidity risk, respectively. As highlighted above, domestic and private banks were used as interaction variables to check the influence of these bank-specific characteristics (NPLs and gross loans to total deposits) on management performance.

Lastly, the fourth part discusses financial analysis results by showing trends of domestic and foreign banks' performance paralleled with NPLs and gross loans to total deposit ratios. This part provides a detailed analysis of management performance before and after TSA adoption.

(i) Relationship Between NPLs and Banks' Management Performance (Cost-to-Income) Using Domestic and Foreign Banks as Interaction Variables

Regression results on the cost-to-income ratio show that the effects of NPL on both domestic and foreign banks' management performance were not statistically significant in both periods (before and after TSA adoption). The above implies that TSA had not directly impacted management performance during the period under review. Nevertheless, the analysis of the financial statements in Table 4.13 shows a deterioration of both domestic and foreign banks' cost-to-income ratios. Domestic

banks' ratio increased from 452% recorded before TSA to 999% after TSA, whereas foreign banks' ratio increased from 315% to 784%. The trend shows a negative impact after TSA, though regression results show an insignificant relationship. In light of the preceding, the study found an indirect relationship between NPL, TSA and management performance. It should be appreciated that during the post-TSA period, a general increase in NPL and bad debt provisions was paralleled by an increase in non-interest expenses for the overall banking sector (BOT, 2020). The increase in cost resulted from banks instituting measures for loan recovery. By then, the new International Financial Reporting requirement for loan provision was operational, causing high NPL provision. Against this background, the cost-to-income ratios rose after TSA adoption. Generalized literature to back the above results is presented in subsequent paragraphs.

(ii)   Relationship Between Gross Loans to Total Deposits and Banks' Management Performance (Cost to Income Ratio) using Domestic and Foreign Banks as Interaction Variables

Regression results on the cost-to-income ratio show that the effects of gross loans to total deposits on both domestic and foreign banks' ratings were not statistically significant in both periods (before and after TSA adoption). The above implies that TSA had not impacted management performance during the period under review. Nevertheless, the analysis of the financial statements in Table 4.17 shows a deterioration of both domestic and foreign banks' cost-to-income ratios. Domestic banks' ratio increased from 452% recorded before TSA to 999% after TSA, whereas foreign banks' ratio increased from 315% to 784%. The trend shows a negative impact after TSA, though regression results show an insignificant relationship. As such, the

study found an indirect relationship between NPL, TSA and management performance. It should be appreciated that during the post-TSA period, a general increase in NPL and bad debt provisions paralleled an increase in non-interest expenses for the overall banking sector (BOT, 2020). The increase in cost resulted from banks instituting measures for loan recovery. By then, the new International Financial Reporting requirement for loan provision was operational, causing high NPL provision. Against this background, the cost-to-income ratios rose after TSA adoption. Regression results on management performance show that the effects of gross loans on total deposits in domestic banks were not statistically significant before TSA.

 However, for foreign banks, the results were positive and statistically significant (5.139, p<0.0), implying that before TSA, an increase in NPL by 1% brought about an increase in cost-to-income ratio by 5.139%, thus deteriorating foreign banks' management performance. It should be appreciated that, though the ratio of gross loans to total deposits for both domestic and foreign banks was still below 75% before the TSA adoption, the trends in Table 4.17 show that the same was still increasing. As for the case of domestic banks, the gross loans to total deposits ratio rose from 53.66% in 2010 to 74.52% in 2015, a year before TSA adoption. Similarly, the foreign banks' ratio rose from 60.17% in 2010 to 64.86% in 2015, a year before TSA adoption. It should be appreciated that, as gross loans increase, chances for rising NPLs increase. The financial analysis revealed that the growth of gross loans to total deposits ratio came with increased NPLs, which affected banks' costs. Financial statements analysis also revealed that domestic banks' NPL ratio rose from 6.45% to 13.29% after TSA adoption, thus justifying the above deterioration of the cost-to-income ratio. For the

case of foreign banks, the NPL ratio remained almost constant as the same was 8.08% before TSA and remained at 8.36% afterwards.

However, after TSA adoption, the results were not statistically significant for domestic and foreign banks, meaning that TSA had little impact on the ratings during the post-TSA adoption period. Nevertheless, financial statements analysis in Table 4.17 shows a deterioration of both domestic and foreign banks' cost-to-income ratios, thus justifying the presence of an indirect relationship between NPL and cost-to-income ratio regardless of their statistical insignificance. Generalized literature to back the above results is presented in subsequent paragraphs.

- **Generalized Literature Review to Back up the Above Regression Results**

The above results for NPLs and gross loans to total deposits ratios on management performance accepted the null hypothesis that bank characteristics' influence has no significant impact on bank performance before and after TSA. The study found that regression results were not statistically significant in both periods meaning that ownership concentration, NPL, gross loans to total deposits and TSA have no direct impact on bank performance. It should be appreciated that some past studies came up with mixed results that depending on the variable used, risk and performance may have both positive or negative and statistically significant relationships with bank performance. However, the present study found an insignificant relationship. Meanwhile, the same independent variables were occasionally found to be statistically significant with other dependent variables such as CAMELS, ROA, ROE, and NIM. We can conclude that there are no conclusive results about the relationships between

risk and performance. Hence the relationship differs depending on the variables used. The study by Aljughaiman and Salama (2019), Pillai, et al. (2017), and Victoria et al. (2018) integrated the agency and the institutional theory to explain bank performance in the MENA countries.

The findings of the studies caution that, depending on the measurement criteria used for the analysis, it is imperative to identify whether the firms' specific governance structure or the ownership structure or characteristics are used as independent variables to gauge their impact on firms' performance. Similar findings were found by Wanke et al. (2019). They concluded that earnings, financial position and financial soundness indicators depend upon various characteristics such as the type of banking institutions, the origin and bank ownership structure. However, some barriers such as cultural differences and regulatory factors may drive the result in a contrary direction. In light of the above, the present study concludes that TSA negatively impacted banks' performance. It should be appreciated that even those variables that were observed to be statistically insignificant were confirmed to have an indirect relationship between the variables and bank performance.

A good example is NPLs ratios which were in some instances recording statistically insignificant relationships; meanwhile, cost-to-income ratios were deteriorating. For that reason, we can generally conclude that, regardless of the statistical significance of some variables, TSA adoption came up with both a direct and or an indirect negative influence on bank performance. However, based on almost all regression results above,

there is reasonable evidence to conclude that TSA adoption did not primarily affect

domestic and foreign banks' cost-to-income ratios, as summarized in Table 4.13.

- **The Summarized Trend of Gross Loans to Total Deposits and NPLs Ratios Against Banks' Regulatory Performance (Cost to Income Ratio) for Domestic and Foreign Banks**

Figure 4.14 shows the trend of NPL and Gross loans to total deposits in relation to

cost to the income ratio. Credit risk and liquidity risks are at the heart of bank

performance. If the liquidity rate increases due to the high gross loans to deposits, the

chances for an increase in NPL become very high, thus affecting banks' earnings and

capital. As such, the overall cost-to-income ratio might negatively deteriorate.

Figure 4. 4: **Trend of NPLs and Gross Loans to Total Deposits and CAMES Rating for (Domestic Versus Foreign)**
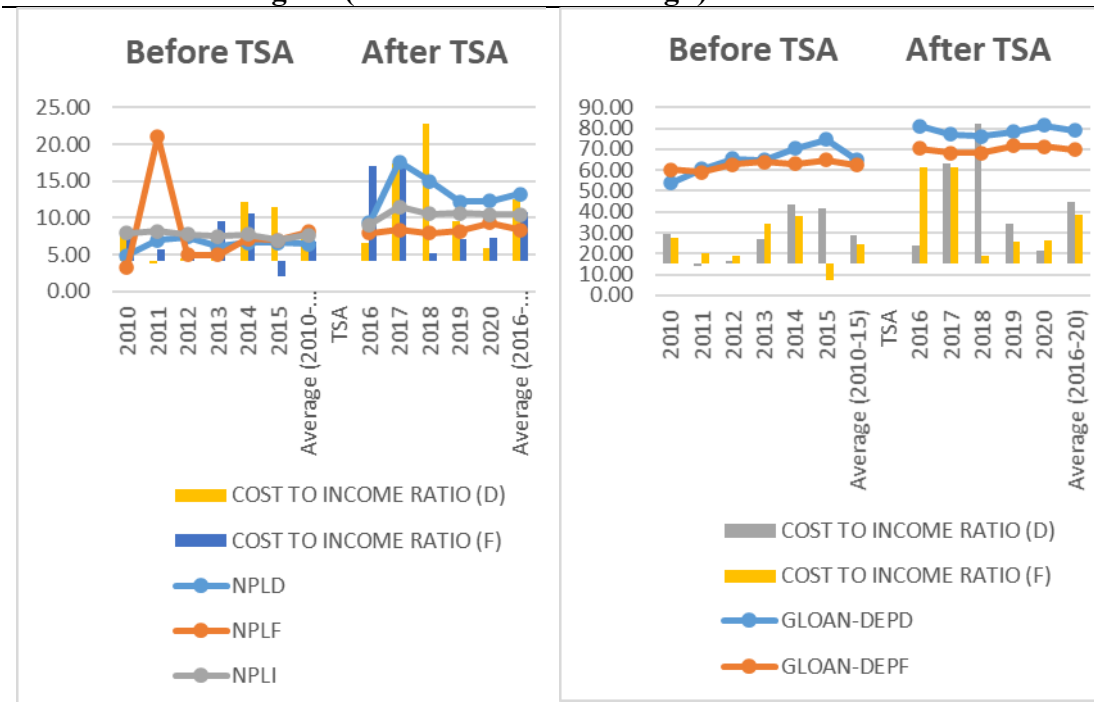
Cost to Income (D)= Domestic Banks, Cost to Income (F)= Foreign Banks, NPLD=Non-Performing Loans for Domestic Banks, NPLF=Non-Performing Loans for Foreign Banks, NPLI =Non-Performing Loans for the Banking Industry

Cost to Income (D)= Domestic Banks, Cost to Income (F)= Foreign Banks, LDR (D) = Gross Loans to Total Deposits for Domestic Banks, LDR (F) = Gross Loans to Total Deposits for Foreign Banks.

Figure 4.14 shows that after TSA adoption, domestic banks' gross loans to total deposits ratio rose from 64.89% to 78.86%. In contrast, the ratio slightly increased for foreign banks from 62.29% to 69.86%, which was not significant compared to domestic banks. Consequently, the NPLs ratio followed suit such that domestic banks' NPLs rose from 6.45% to 13.29%, whereas for foreign banks, the ratio slightly increased from 8.08% to 8.36%, the increase of which was not significant. The above shows a direct link between the increase in gross loans and NPLs. As gross loans increase, the chances for an increase in NPLs increase. The rise in NPLs came with an increase in non-interest expenses due to banks' efforts to recover NPLs; as a result,

operating costs went high after TSA adoption, rendering the cost-to-income ratio deteriorate as well. Financial statements analysis shows that, after TSA, domestic banks' cost-to-income ratio was double the ratio recorded before TSA.

The ratio increased from 452% before TSA to 999% after TSA compared to foreign banks, whose ratio increased from 315% to 784% after TSA. This implies that after TSA adoption, domestic and foreign banks' cost-to-income ratios were negatively affected as they recorded an upward movement. However, foreign banks' ratio was still lower than domestic banks' ratio implying that foreign banks' management performance was better off compared to domestic banks. Tables 4.13 and 4.16 provide evidence of the general increase in NPLs and the cost-to-income ratios for all banks, respectively. It was also revealed that the increased cost-to-income ratio was mainly attributed to the rise in personnel expenses reported in the 2020 financial sector supervision report. The personnel expense ratio to non-interest expense rose from 44.34% in 2016 to 50% in 2020. It is against this background that both domestic and private banks' ratios had recorded increased cost-to-income ratios after TSA adoption, and foreign banks were still better off compared to domestic banks.

(iii)   Relationship Between NPLs and Banks' Management Performance (Cost to Income Ratio) Using Private and State-Owned Banks as Interaction Variables

Regression results on the cost-to-income ratio show that the effects of NPL on both private and state-owned banks were not statistically significant before TSA and after TSA adoption. However, a review of financial statements revealed that private banks' cost-to-income ratio had deteriorated due to the increase in cost-to-income ratio. Table

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4.13 shows that private banks' cost-to-income ratio rose from 383% before TSA to 1164% afterwards. In the same vein, Private banks' NPL ratio rose from 5.89% to 10.72%, thus justifying the reason for an increased cost-to-income ratio. It was not only the increase in NPLs that caused the increase in private banks' cost-to-income ratio, but also the banking sector as a whole was characterized by an increase in non-interest expenses after TSA adoption. During the post-TSA adoption period, the country's GDP ratio was slowing down, causing many businesses to collapse. As such, this affected the banking business because most clients defaulted to repay their loans; thus, high NPLs were recorded during the period. For the case of state-owned banks, the cost-to-income ratio declined from 686% before TSA to 81% afterwards. The ratio improvement can be justified due to the merger of three state-owned banks, thus cutting down unnecessary expenditures.

It was in 2018 when Tanzania women banks and Twiga Bancorp merged with Tanzania Postal Bank. The merger came with the retrenchment of disguised employees and a general cut down on general expenses. However, the merger came as a result of the poor performance of the merged banks. Thus, as a rescue strategy, the government resolved to merge the three banks; otherwise, if it were not for the merger, state-owned banks' cost-to-income ratio would have gone up significantly. Based on the financial analysis, we can conclude that, though regression results show insignificant relationships between the variables, this study found an indirect relationship between NPL, TSA and cost-to-income ratio. Generalized literature to back the above results is presented in subsequent paragraphs.

(iv) **Relationship Between Gross Loans to Total Deposits and Banks' Management Performance (Cost to Income Ratio) using Private and State-Owned Banks as Interaction Variables**

Regression results on the cost-to-income ratio show that the effects of gross loans to total deposits ratio on private banks were positive and statistically significant (6.445, $p<0.05$) before TSA. In contrast, for state-owned banks, the results were not statistically significant. For the case of private banks, the results imply that an increase of gross loan to total deposits by 1% increases the cost-to-income ratio by 1%, thus deteriorating management performance. Regression results for state-owned banks were not statistically significant before TSA. On the other hand, the results show that, after TSA, both private and state-owned banks recorded statistically insignificant results implying that TSA had not impacted the cost-to-income ratios. However, a review of financial statements revealed that, after TSA adoption, private banks' cost-to-income ratio had deteriorated due to the increase in cost-to-income ratio. Table 4.13 shows that private banks' cost-to-income ratio rose from 383% before TSA to 1164% afterwards. In the same vein, private banks' NPL ratio rose from 5.89% to 10.72%, thus justifying the reason for an increased cost-to-income ratio.

As highlighted in the case of NPLs above, it was not only the increase in NPLs that caused the increase in private banks' cost-to-income ratio but also the banking sector as a whole was characterized by an increase in non-interest expense after TSA adoption. During the post-TSA adoption period, the country's GDP ratio was slowing down, causing many businesses to collapse. As such, this affected the banking business because most clients defaulted to repay their loans; thus, high NPLs were recorded during the period. For the case of state-owned banks, the cost-to-income ratio declined

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from 686% before TSA to 81% afterwards. The ratio improvement can be justified due to the merger of three state-owned banks, thus cutting down unnecessary expenditures. It was during 2018 when Tanzania women banks and Twiga Bancorp merged with Tanzania Postal Bank. The merger came with the retrenchment of disguised employees and a general cut down on general expenses. However, the merger came as a result of the poor performance of the merged banks. Thus, as a rescue strategy, the government resolved to merge the three banks; otherwise, if it were not for the merger, the state-owned banks' cost-to-income ratio would have gone up significantly. Based on the financial analysis, we can conclude that, though regression results show insignificant relationships between the variables, this study found an indirect relationship between NPL, TSA and cost-to-income ratio. Generalized literature to back the above results is presented in subsequent paragraphs.

- **Generalized Literature Review to Back up the Above Regression Results**

The above results for the cost-to-income ratio showed diverse relationships. The results show partial rejection and acceptance of the null hypothesis, which states that the influence of bank characteristics has no significant impact on bank performance before and after TSA. The study found that all performance indicators had varying relationships in both periods, such as failing to conclude the relationships between the abovementioned variables. It should be appreciated that a number of past studies came up with similar results. Therefore, based on their results, we can argue that there are no conclusive results about the relationships between independent and dependent variables. The results may differ in a number of ways. The study by Aljughaiman and Salama (2019), Pillai, et al. (2017), and Victoria et al. (2018) integrated the agency

and the institutional theory to explain bank performance in the MENA countries. The findings of the studies caution that, depending on the measurement criteria used for the analysis, it is imperative to identify whether the firms' specific governance structure or the ownership structure or characteristics are used as independent variables to gauge their impact on firms' performance. Similar findings were found by Wanke et al. (2019). They concluded that earnings, financial position and financial soundness indicators depend upon various characteristics such as the type of banking institutions, the origin and bank ownership structure. However, some barriers such as cultural differences and regulatory factors may drive the result in a contrary direction. In light of the above, the present study concludes that TSA negatively impacted banks' performance. It should be appreciated that even those variables that were observed to be statistically insignificant were confirmed to have an indirect relationship between the variables and bank performance.

A good example is NPLs ratios which were in some instances recording statistically insignificant relationships; meanwhile, the cost-to-income ratios were deteriorating. For that reason, we can generally conclude that, regardless of the statistical significance of some variables, TSA adoption came up with both a direct and or an indirect negative influence on bank performance. However, based on almost all regression results above, there is reasonable evidence to conclude that TSA adoption did not primarily affect domestic and foreign banks' cost-to-income ratios, as summarized in Table 4.13.

- **The Summarized Trend of Gross Loans to Total Deposits and NPLs Ratios Against Banks' Management Performance (Cost to Income Ratio) for Private and State-Owned Banks**

Figure 4.15 shows the trend of NPL and Gross loans to total deposits in relation to the cost-to-income ratio. It should be appreciated that credit risk and liquidity risks are at the heart of bank performance. If the liquidity rate increases due to the high gross loans to deposits, the chances for an increase in NPL becomes very high, thus affecting banks' earnings and capital. As such, the overall cost-to-income ratio might negatively deteriorate. The table below provides a helpful summary.

Figure 4. 5: Trend of Gross Loans to Total Deposits, NPLs Ratios and Cost to Income Ratio for Private and State-owned Banks

Cost to Income (P)= Private Banks, Cost to Income (S)= State-Owned Banks, NPLP=Non-Performing Loans for Private Banks, NPLF=Non-Performing Loans for State-Owned Banks, NPLI =Non-Performing Loans for the Banking Industry

Cost to Income (P)= Private Banks, Cost to Income (S)= State-Owned Banks, LDR (P) = Gross Loans to Total Deposits for Private Banks, LDR (S) = Gross Loans to Total Deposits for State-Owned Banks.

Figure 4.15 shows that after TSA adoption, private banks' gross loans to total deposits ratio rose from 72.91% to 73.99%, whereas for state-owned banks, the ratio had increased significantly from 59.52% to 76.73%. Consequently, NPLs ratios followed suit such that private banks' NPLs rose from 5.89% to 10.72%, whereas, for state-owned banks, the ratio increased from 7.34% to 10.94%, the increase of which was

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not significant compared to private banks. As highlighted in previous sections, the above analysis shows a direct link between an increase in gross loans and NPLs. As gross loans increase, the chances for an increase in NPLs increase. The rise in NPLs came with an increase in non-interest expenses due to banks' efforts to recover NPLs; as a result, operating costs went high after TSA adoption, rendering the cost-to-income ratio deteriorate as well. Financial statements analysis shows that, after TSA, private banks' cost-to-income ratio increased from 383% to 1164% after TSA as opposed to state-owned banks, whose ratio decreased from 686% to 81% after TSA. This implies that after TSA, state-owned management performance was better than private banks' performance. Tables 4.11 and 4.19 provide evidence for the general increase in NPLs and the cost-to-income ratios for all banks, respectively. It was also revealed that the reasons for the increased cost-to-income ratio for private banks were mainly attributed to the increase in the overall banking sector's ratio of personnel expenses, as reported in the 2020 financial sector supervision report. The overall banking industry ratio of personnel expense to non-interest expense rose from 44.34% in 2016 to 50% in 2020.

Against this background, except for state-owned banks, which recorded a declined stance, all other bank categories had recorded increased cost-to-income ratios. A decline in the state-owned ratio resulted from the merger between three state-owned banks, thus cutting down the cost-to-income ratio. Therefore, TSA has brought up an overall negative impact on private banks, while the effect was positive on state-owned banks. As such, management performance for state-owned banks had improved while private banks' management performance deteriorated after TSA adoption.

b) Relationship Between Bank Risks (NPLs and Gross Loans to Total Deposits Ratio) on Banks' Management Performance (Cost to Income Ratio) using Large and Small Banks as Interaction Variables

This subsection presents results in four parts. The first part discusses the influence of NPL on bank performance. In contrast, the second part focused on the influence of gross loans to total deposits on bank performance. The third aspect covers the overall literature to back up the findings in parts one and two. These risk indicators (NPL and gross loans to total deposits) share similar characteristics. A number of studies have discussed bank risks as a whole by covering both credit and liquidity risks as key risk indicators. As such, to avoid repetition of similar literature on each regression result, this study has discussed generalized literature covering both credit and liquidity risks using NPL and gross loans to total deposit ratios as proxies for credit and liquidity risk, respectively. As highlighted above, domestic and private banks were used as interaction variables to check the influence of these bank-specific characteristics (NPLs and gross loans to total deposits) on bank performance. Lastly, the fourth part discusses financial analysis by showing trends of large and small banks' performance paralleled with NPLs and gross loans to total deposit ratios. This part provides a detailed analysis of management performance before and after TSA adoption.

(i)   Relationship Between NPLs and Banks' Management Performance (Cost to Income Ratio) using Large and Small Banks as Interaction Variables

Regression results on the cost-to-income ratio show that the effects of NPL on large and small banks were not statistically significant before and after TSA adoption. The above results imply that, whether with TSA or not, the cost-to-income ratios would still deteriorate, as reported in Table 4.20. As for the case of large banks, NPL was

almost constant at an average rate of 7% before TSA adoption, whereas small banks' NPL ratio rose from 3.97% in 2010 to 6.96% in 2015, a year before TSA. However, after TSA adoption, large banks' NPL ratio was almost constant at an average of 7%% in both periods (before and after TSA adoption). In contrast, small banks' ratios rose from 5.64% to 12.15%, thus justifying the above deterioration of the cost-to-income ratios. Table 4.16 shows that, after TSA adoption, large banks' cost-to-income ratio had deteriorated from 253% to 1208%, whereas small banks' ratio worsened from 926% to 1141%. Regression results for large and small banks were not statistically significant after TSA. However, there is reasonable evidence of an indirect relationship between TSA, NPL and the cost-to-income ratio, such that as NPL increases, the cost-to-income ratio also deteriorates. Generalized literature to back the above results is presented in subsequent paragraphs.

(ii)   Relationship Between Gross Loans to Total Deposits and Banks' Management Performance (Cost to Income Ratio) using Large and Small Banks as Interaction Variables

Regression results on the cost-to-income ratio show that the effects of gross loans on total deposits in large banks were not statistically significant. In contrast, the results for small banks were positive and statistically significant (5.061, $p<0.01$) before TSA adoption. The above implies that an increase in the gross loans to total deposits ratio for small banks caused a rise in the cost-to-income ratio by 5.06%. The reason for the increase in the cost-to-income ratio during the pre-TSA period came as a result of an increase in NPLs and other non-interest expenses. Table 4.17 shows that during the pre-TSA period, small banks' NPL ratio rose from 3.97% in 2010 to 6.96% in 2015, a year before TSA, thus justifying the above regression results.

On the other hand, the results for both large and small banks turned out statistically insignificant after TSA adoption, implying that whether with TSA or not, the cost-to-income ratios would still deteriorate, as reported in Table 4.20.

Large banks' NPL ratio was almost constant at an average of 7%% in both periods (before and after TSA adoption). Contrariwise small banks' ratios rose from 5.64% to 12.15%, thus justifying the above deterioration of the cost-to-income ratios. Table 4.20 shows that, after TSA adoption, large banks' cost-to-income ratio had deteriorated from 253% to 1208%, whereas small banks' ratio deteriorated from 926% to 1141%. Regression results for large and small banks were not statistically significant after TSA. However, there is reasonable evidence of an indirect relationship between TSA, NPL and to income ratio. Financial analysis revealed that as NPL rises, the cost-to-income ratio deteriorates as well. Generalized literature to back up the above results is presented below.

- **Generalized Literature Review to Back up the Above Regression Results**

The above results for the cost-to-income ratio showed diverse relationships. The results show partial rejection and acceptance of the null hypothesis, which states that the influence of bank characteristics has no significant impact on bank performance before and after TSA. The study found that all performance indicators had varying relationships in both periods, such as failing to conclude the relationships between the abovementioned variables. It should be appreciated that a number of past studies came up with similar results. Therefore, based on their results, we can argue that there are no conclusive results about the relationships between independent and dependent

variables. The results may differ in a number of ways. The study by Aljughaiman and Salama (2019), Pillai, et al. (2017), and Victoria et al. (2018) integrated the agency and the institutional theory to explain bank performance in the MENA countries. The findings of the studies caution that, depending on the measurement criteria used for the analysis, it is imperative to identify whether the firms' specific governance structure or the ownership structure or characteristics are used as independent variables to gauge their impact on firms' performance. Similar findings were found by Wanke et al. (2019). They concluded that earnings, financial position and financial soundness indicators depend upon various characteristics such as the type of banking institutions, the origin and bank ownership structure. However, some barriers such as cultural differences and regulatory factors may drive the result in a contrary direction. In light of the above, the present study concludes that TSA negatively impacted banks' performance. It should be appreciated that even those variables that were observed to be statistically insignificant were confirmed to have an indirect relationship between the variables and bank performance.

A good example is NPLs ratios which were in some instances recording statistically insignificant relationships; meanwhile, the cost-to-income ratios were deteriorating. For that reason, we can generally conclude that, regardless of the statistical significance of some variables, TSA adoption came up with both a direct and or an indirect negative influence on bank performance. However, based on almost all regression results above, there is reasonable evidence to conclude that TSA adoption did not primarily affect small and large banks' cost-to-income ratios, as summarized in Table 4.16.

- **The Summarized Trend of Gross Loans to Total Deposits and NPLs Ratios Against Banks' Management Performance (Cost to Income Ratio) for Large and Small Banks**

Figure 4.16 shows the trend of NPL and Gross loans to total deposits with cost to income ratio. It should be appreciated that credit risk and liquidity risks are at the heart of bank performance. If the liquidity rate increases due to the high gross loans to deposits, the chances for an increase in NPL becomes very high, thus affecting banks' earnings and capital. As such, the overall cost-to-income ratio might negatively deteriorate. The table below provides a helpful summary.

Figure 4. 6: **Gross Loans to Total Deposits, NPLs Ratios, and Cost to Income Ratio for Large and Small Banks.**
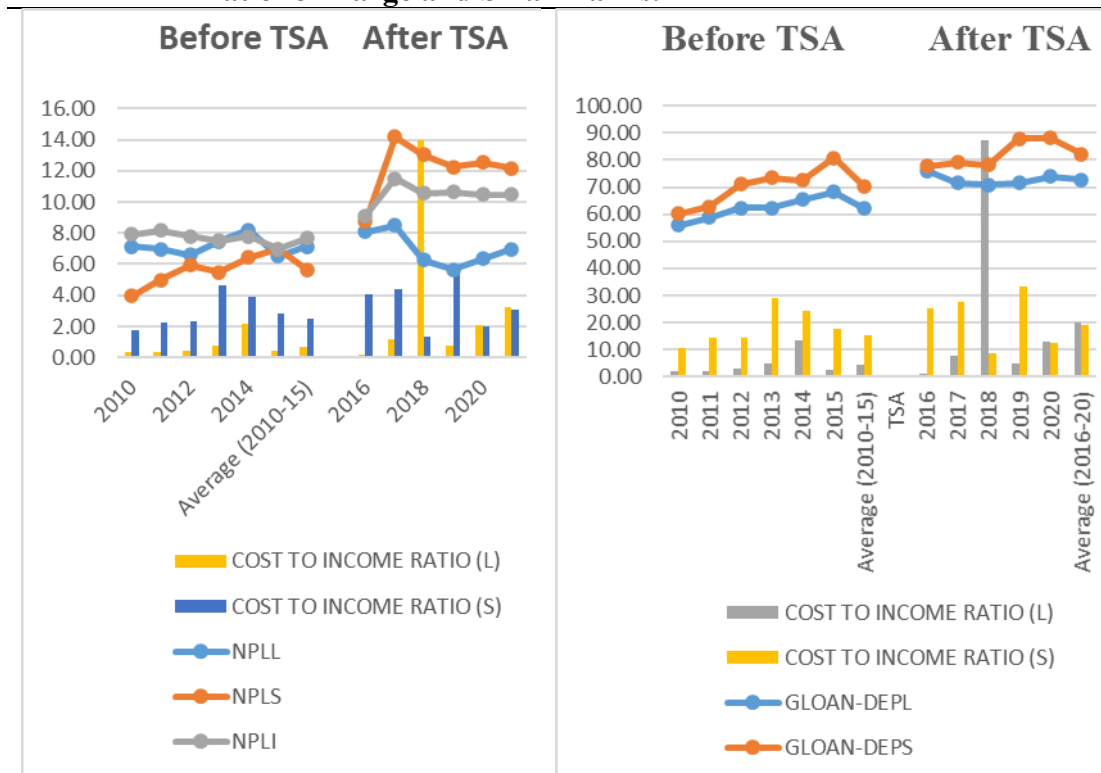
Cost to Income (P)= Large Banks, Cost to Income (S)= Small Banks, NPLL=Non-Performing Loans for Large Banks, NPLF=Non-Performing Loans for Small Banks, NPLI =Non-Performing Loans for the Banking Industry

Cost to Income (L)= Large Banks, Cost to Income (S)= Small Banks, LDR (L) = Gross Loans to Total Deposits for Large Banks, LDR (S) = Gross Loans to Total Deposits for Small Banks.

Figure 4.16 shows that after TSA adoption, large banks' gross loans to total deposits ratio rose from 62.16% to 72.78%, whereas for small banks, the ratio increased from 70.13% to 82.26%. Consequently, the NPLs ratio for small banks followed suit such that small banks' NPLs rose from 5.64 % to 12.15%, whereas for large banks, the ratio had slightly decreased from 7.14% to 6.98%, say 7%, the decrease of which was not material. Generally speaking, the overall results for the banking sector show a direct link between an increase in gross loans and NPLs. Based on the preceding, large banks had an optional impact as NPL almost remained constant regardless of the increase in gross loans to total deposits ratio. It should be appreciated that, as gross loan increases, the chances for NPLs increase. The rise in NPLs came with an increase in non-interest expenses due to banks' efforts to recover NPLs; as a result, operating costs went high after TSA adoption, rendering the cost-to-income ratio deteriorate as well. Financial statements analysis shows a negative impact on the cost-to-income ratio, as evidenced by an increase in the cost-to-income ratio for both large and small banks. However, large banks had recorded a lower cost-to-income ratio of 253% compared to 926% for small banks before TSA. Contrariwise, small banks had recorded a lower ratio after TSA than large banks. The analysis also shows that the small banks' ratio was 1141% compared to 1208% for large banks. TSA generally came with an increased cost-to-income ratio for large and small banks, implying that management performance had deteriorated due to TSA adoption. Table 4.13 summarizes management performance trends for large and small banks before and after TSA adoption. Tables 4.17 and 4.16 provide evidence for the general increase in NPLs and the cost-to-income ratios for all banks, respectively. It was also revealed that the increased cost-to-income ratio was

mainly attributed to the rise in personnel expenses reported in the 2020 financial sector supervision report. The personnel expense ratio to non-interest expense rose from 44.34% in 2016 to 50% in 2020. It is against this background that both domestic and private banks ratios had recorded increased cost-to-income ratios after TSA adoption, only those small banks were still better off compared to large banks though at a minimal magnitude, as shown above.